AD-A127 201 FLEET MOORING LEG DESIGN PROGRAM DOCUMENTATION VOLUME 2 1/1
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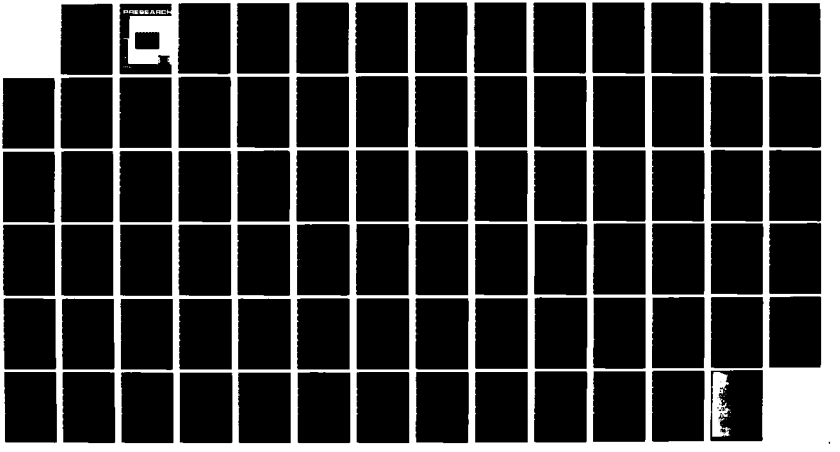
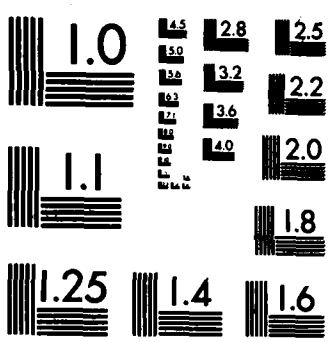
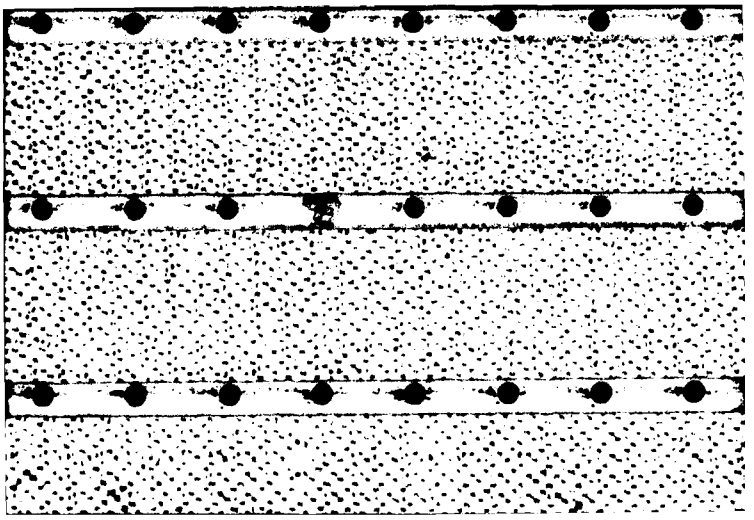




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



PRESEARCH INCORPORATED

(1)

FLEET MOORING LEG
DESIGN PROGRAM DOCUMENTATION
Volume 2
USER DOCUMENTATION

FPO-1-82-(33)

December 1982

General Distribution

Performed for
Ocean Engineering and Construction Project Office
Chesapeake Division
Naval Facilities Engineering Command
Washington, D.C. 20374
Under
Contract N62477-81-C-0025

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FLEET MOORING LEG DESIGN PROGRAM DOCUMENTATION

Volume 2

USER DOCUMENTATION

	Section	Volume
I.	EQUILIBRIUM EQUATIONS REPORT	1
II.	USER DOCUMENTATION	2
III.	SUBROUTINE DESCRIPTIONS	3
IV.	SOURCE LISTINGS	
	Query, Preprocessor, and Simple Leg	4
	Compound Leg Basic Solution	5
	Compound Leg Reverse Solutions and Postprocessor	6
	Table and Graphs	7
V.	LINK COMMAND FILES	8
VI.	PROGRAM FILE DESCRIPTIONS	8
VII.	COMMON BLOCKS	8
VIII.	DIRECTORY LISTINGS	8
IX.	IPL TAPE LISTINGS	8

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II USER DOCUMENTATION

SYSTEM INITIALIZATION 1

	MOORΦ2	MOORΦ4	MOORΦ5 ELV	MOORΦ5 PLN	MOORΦ5 LDC
SLACK SOLUTION					
Simple Leg					
H, Φ_H	2-7	26-28	17-22	23-25	29-31
R_{TOT}, Φ_R	8-12	*	*	*	*
X_{TOT}, Z_{TOT}	13-16	*	*	*	*
Spider Plate					
H, Φ_H	32-33	38	34-35	36-37	39-40
R_{TOT}, Φ_R	41-42	*	*	*	*
X_{TOT}, Z_{TOT}	43-44	*	*	*	*
Equalizer					
H, Φ_H	45-46	51	47-48	49-50	52-53
R_{TOT}, Φ_R	54-55	*	*	*	*
X_{TOT}, Z_{TOT}	56-57	*	*	*	*
TAUT SOLUTION					
Simple Leg					
?(H, X)	58-62	*	63-64	65-66	*
?(A1, S3)	67-69	*	*	*	*
?(S1, C2)	70-72	*	*	*	*

PROGRAM FLOWCHARTS

MOORΦ1	73	MOORΦ4	75
MOORΦ2	74	MOORΦ5	76

```
COS Version 4 Level 02 (SMLRTL)
*SET DATE,H
DD-MMM-YY
*02-DEC-82
*SET TIME,H
HH-MM-SS
*16-45-00
*SYSTAT

System Status of COS Version 4 Level 02 (SMLRTL)

December 2, 1982       16:45  4

Devices: SYS*,KB0,DC,JOY,DK0,DK1
         NUL,SYS(DK0),USR(DK1),GIN(JOY)

         Character size 4, 64KB memory, COSTOP - 5EAA

*DIR DOC


  Directory Structure of USR:DOC     2-Dec-82
  Directory Blocks: Available= 20, Used=  1


  Files-0,Blocks-0,Free-980,Largest-980


*RUN MOOR02
```

```
Enter library name
DOC
Do you have a file of input values?
NO
Enter leg/riser title
DOCUMENTATION 1A
Enter solution type (unitless)
     1 - taut leg procedure
     2 - slack leg procedure
2
Enter type of leg (unitless)
     1 - simple
     2 - compound with equalizer
     3 - compound with spider plate
1
Enter X-Coordinate of Point 1 (feet)
0
Enter Z-Coordinate of Point 1 (feet)
0
Enter D-Coordinate of Point 1 (feet)
100
Enter X-Coordinate of Point 2 (feet)
1
Enter Z-Coordinate of Point 2 (feet)
0
Enter D-Coordinate of Point 2 (feet)
101
Enter X-Coordinate of Point 3 (feet)
0
Enter Z-Coordinate of Point 3 (feet)
1
Enter D-Coordinate of Point 3 (feet)
101
Enter number of segments in branch A (unitless)
3
Enter length of first (lowest) segment of A (S1A)  (feet)
300
Enter linear weight of first segment of A (W1A)  (pounds/foot)
10
Enter weight of first sinker on A (C1A) (kips)
50
Enter length of second segment of A (S2A) (feet)
300
Enter linear weight of second segment of A (W2A)  (pounds/foot)
20
Enter weight of second sinker on A (C2A) (kips)
40
Enter length of third segment of A (S3A) (feet)
400
Enter linear weight of third segment of A (W3A)  (pounds/foot)
25
You must specify one of the following options
     1  Horizontal load magnitude and direction
     2  Horizontal displacement and direction
     3  Buoy X and Z coordinates
     4  None (system solution)s
The other values will be solved
```

```
Which option do you want to specify (1, 2, 3, or 4) (unitless)?
1
Enter magnitude of horizontal load (H) (kilopounds)
10
Enter angle from neutral direction to horizontal load vector (degrees)
60
Do you want to see parameter list again?
YES
```

```
TITLE  DOCUMENTATION 1A
INPUT FILE  NONE
 1       2          SOLUTION TYPE (-)
 2       1          LEG TYPE (-)
 3       ********** ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       100        OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       101        OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       101        OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   300        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   10         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   50         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   300        LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   20         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   40         WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   400        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   25         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   ********** LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   ********** LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   ********** WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   ********** LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   ********** LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   ********** WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   ********** LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   ********** LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       ********** INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       ********** FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3    ********** WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    ********** LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    ********** LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     10         HORIZONTAL LOAD (kips)
39       60         HORIZONTAL LOAD DIRECTION (deg)

40       U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       U          BUOY DISPLACEMENT DIRECTION (deg)

42       U          BUOY X-COORDINATE (ft)
43       U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN1A
```

SOLUTION BEGUN AT 16 49 10
SOLUTION COMPLETED AT 16 49 15

Date 2-Dec-82 SUMMARY Time 16:49:15

DOCUMENTATION 1A

INPUT

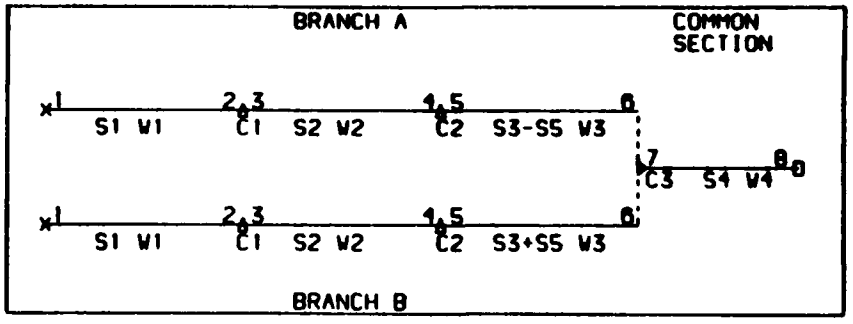
Original Input From File NONE

Revised to File DOC/RUN1A VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEG

		---A---	---B---
Type		simple	
Anchor Separation			
Segments in Branch		3	
Angle to Bottom		0 00	
Length of Segment 1	S1	300 00	
Linear Weight of Segment 1	W1	10 00	
Weight of Sinker 1	C1	50 00	
Length of Segment 2	S2	300 00	
Linear Weight of Segment 2	W2	20 00	
Weight of Sinker 2	C2	40 00	
Start Length of Segment 3	S3	400 00	
Linear Weight of Segment 3	W3	25 00	
Friction Coefficient			
Weight of Equalizer/Spider	C3		
Length of Segment 4	S4		
Linear Weight of Segment 4	W4		



OCEAN BOTTOM

	---X---	-Depth-	---Z---
Floor Direction		45 00	
Floor Slope		-54 74	
Point P1	0 00	100 00	0 00
Point P2	1 00	101 00	0 00
Point P3	0 00	101 00	1 00
Anchor A	0 00	0 00	0 00
Anchor B			
Origin	0 00	0 00	0 00

OCEAN SURFACE

Load Direction	00 00
Horizontal Load H	10 00
Projected Excursion	553 82
True Excursion	553 82

OUTPUT

UNKNOWN INPUTS

553 82 - Buoy Excursion

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	60 00													
VA	-53 79													
C														
L	300 00													
H	10 00													
X	0 00		88 00		234 52								276 91	
Y	0 00		-242 07		-290 88								100 00	
Z	0 00		153 47		406 21								470 63	
A	-53 79	-53 79	-25 27	7 30	76 38	78 97								
V	-42 35	-40 39	-4 72	1 28	41 28	51 28								
T	52 48	50 06	11 06	10 08	42 47	52 25								

```
Do you want to save output for elevation views?
YES
Enter segment increment length (feet)
10
Do you want to save output for plan views?
YES
Do you want another run?
YES
Do you have a file of input values?
YES
Enter name of leg/riser file
RUN1A
Do you want to see parameter list again?
YES
```

```
TITLE  DOCUMENTATION 1A
INPUT FILE  DOC/RUN1A VAR
 1       2          SOLUTION TYPE (-)
 2       1          LEG TYPE (-)
 3       ********* ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       100        OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       101        OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       101        OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   300        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   10         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   50         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   300        LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   20         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   40         WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   400        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   25         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   ********* LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   ********* LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   ********* WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   ********* LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   ********* LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   ********* WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   ********* LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   ********* LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3    ********* WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    ********* LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    ********* LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     10         HORIZONTAL LOAD (kips)
39       60         HORIZONTAL LOAD DIRECTION (deg)

40       U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       U          BUOY DISPLACEMENT DIRECTION (deg)

42       U          BUOY X-COORDINATE (ft)
43       U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
YES
Do you want to change the title?
YES
Enter new title
DOCUMENTATION 1B
For each input value to be changed, enter variable number, followed by new value on the same line,
with one new value per line   To terminate new input, enter '99' followed by any dummy value
To continue when display is full, type CTRL-N five times, followed by CTRL-R
38 U
39 U
40 553 82
41 60
99 9
Do you want to see parameter list again?
YES
```

```
TITLE  DOCUMENTATION 1B
INPUT FILE  DOC/RUN1A VAR
 1       2          SOLUTION TYPE (-)
 2       1          LEG TYPE (-)
 3       ********* ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       100        OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       101        OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       101        OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   300        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   10         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   50         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   300        LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   20         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   40         WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   400        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   25         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   ********* LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   ********* LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   ********* WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   ********* LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   ********* LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   ********* WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   ********* LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   ********* LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3    ********* WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    ********* LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    ********* LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     U          HORIZONTAL LOAD (kips)
39       U          HORIZONTAL LOAD DIRECTION (deg)

40       553 82     ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       60         BUOY DISPLACEMENT DIRECTION (deg)

42       U          BUOY X-COORDINATE (ft)
43       U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN1B
```

SOLUTION BEGUN AT 17 1 54
SOLUTION COMPLETED AT 17 2 0

Date 2-Dec-82 SUMMARY Time 17 2 8

DOCUMENTATION 1B

INPUT

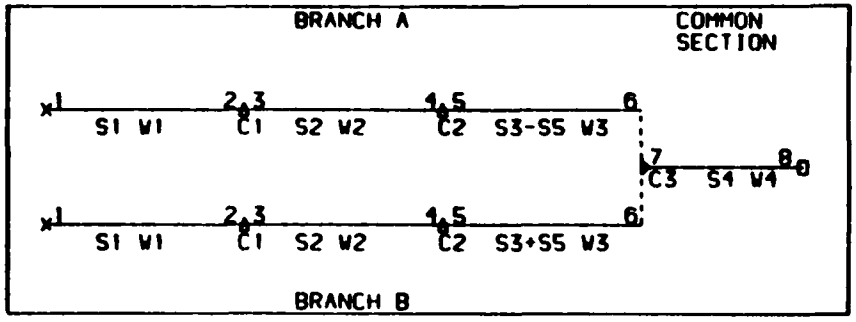
Original Input From File DOC/RUN1A VAR

Revised to File DOC/RUN1B VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEG

		---A---	---B---
Type		simple	
Anchor Separation			
Segments in Branch		3	
Angle to Bottom		0 00	
Length of Segment 1	S1	300 00	
Linear Weight of Segment 1	W1	10 00	
Weight of Sinker 1	C1	50 00	
Length of Segment 2	S2	300 00	
Linear Weight of Segment 2	W2	20 00	
Weight of Sinker 2	C2	40 00	
Start Length of Segment 3	S3	400 00	
Linear Weight of Segment 3	W3	25 00	
Friction Coefficient			
Weight of Equalizer/Spider	C3		
Length of Segment 4	S4		
Linear Weight of Segment 4	W4		



OCEAN BOTTOM

	---X---	-Depth-	---Z---
Floor Direction		45 00	
Floor Slope		-54 74	
Point P1	0 00	100 00	0 00
Point P2	1 00	101 00	0 00
Point P3	0 00	101 00	1 00
Anchor A	0 00	0 00	0 00
Anchor B			
Origin	0 00	0 00	0 00

OCEAN SURFACE

Load Direction	60 00
Horizontal Load H	10 00
Projected Excursion	553 82
True Excursion	553 82

OUTPUT

UNKNOWN INPUTS

10 00 - Horizontal Load Magnitude

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	60 00													
VA	-53 79													
C														
L	300 00													
H	10 00													
X	0 00		88 60		234 52								276 91	
Y	0 00		-242 07		-290 88								100 00	
Z	0 00		153 47		406 21								479 62	
A	-53 79	-53 79	-25 27	7 30	76 38	78 97								
V	-42 35	-40 39	-4 72	1 28	41 28	51 28								
T	52 48	50 06	11 06	10 08	42 47	52 25								

```
Do you want to save output for elevation views?
NO
Do you want to save output for plan views?
NO
Do you want another run?
YES
Do you have a file of input values?
YES
Same input file as before?
YES
Do you want to see parameter list again?
YES
```

```
TITLE  DOCUMENTATION 1A
INPUT FILE  DOC/RUN1A VAR
 1       2          SOLUTION TYPE (-)
 2       1          LEG TYPE (-)
 3       ********* ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       100        OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       101        OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       101        OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   300        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   10         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   50         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   300        LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   20         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   40         WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   400        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   25         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   ********* LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   ********* LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   ********* WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   ********* LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   ********* LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   ********* WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   ********* LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   ********* LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3    ********* WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    ********* LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    ********* LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     10         HORIZONTAL LOAD (kips)
39       60         HORIZONTAL LOAD DIRECTION (deg)

40       U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       U          BUOY DISPLACEMENT DIRECTION (deg)

42       U          BUOY X-COORDINATE (ft)
43       U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
YES
Do you want to change the title?
YES
Enter new title
DOCUMENTATION 1C
For each input value to be changed, enter variable number, followed by new value on the same line,
with one new value per line   To terminate new input, enter '99' followed by any dummy value
To continue when display is full, type CTRL-N five times, followed by CTRL-R
38 U
39 U
42 276 91
43 479 62
99 9
Do you want to see parameter list again?
NO
Do you want to save parameters in a file?
NO
```

SOLUTION BEGUN AT 17 7 6
SOLUTION COMPLETED AT 17 7 12

Date 2-Dec-82 SUMMARY Time 17 7 12

DOCUMENTATION 1C

INPUT

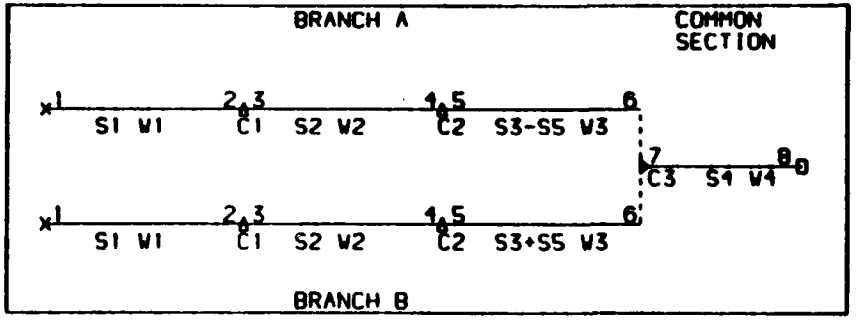
Original Input From File DOC/RUN1A VAR

Revised to File

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEC

		---A---	---B---
Type	simple		
Anchor Separation			
Segments in Branch		3	
Angle to Bottom		0 00	
Length of Segment 1	S1	300 00	
Linear Weight of Segment 1	W1	10 00	
Weight of Sinker 1	C1	50 00	
Length of Segment 2	S2	300 00	
Linear Weight of Segment 2	W2	20 00	
Weight of Sinker 2	C2	40 00	
Start Length of Segment 3	S3	400 00	
Linear Weight of Segment 3	W3	25 00	
Friction Coefficient			
Weight of Equalizer/Spider	C3		
Length of Segment 4	S4		
Linear Weight of Segment 4	W4		



OCEAN BOTTOM

	---X---	-Depth-	---Z---
Floor Direction		45 00	
Floor Slope		-54 74	
Point P1	0 00	100 00	0 00
Point P2	1 00	101 00	0 00
Point P3	0 00	101 00	1 00
Anchor A	0 00	0 00	0 00
Anchor B			
Origin	0 00	0 00	0 00

OCEAN SURFACE

Load Direction	60 00
Horizontal Load H	10 00
Projected Excursion	553 82
True Excursion	553 82

OUTPUT

UNKNOWN INPUTS

10 00 - Horizontal Load Magnitude 60 00 - Horizontal Load Direction

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	60 00													
VA	-53 79													
C														
L	300 00													
H	10 00													
X	0 00		88 60		234 53								276 91	
Y	0 00		-242 07		-290 88								100 00	
Z	0 00		153 47		406 21								479 62	
A	-53 79	-53 79	-25 27	7 30	76 38	78 97								
V	-42 35	-40 39	-4 72	1 28	41 28	51 28								
T	52 48	50 06	11 06	10 08	42 47	52 25								

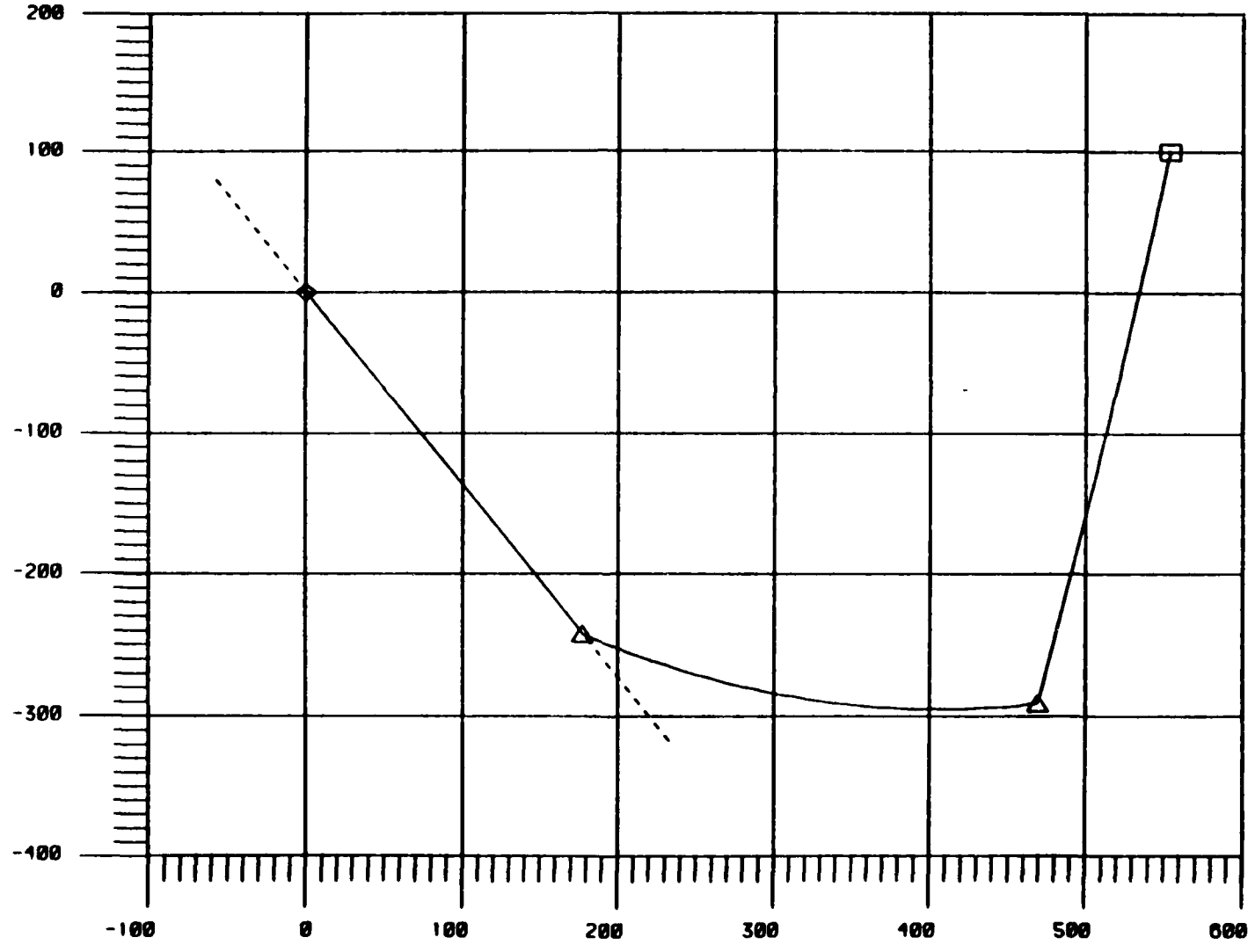
```
Do you want to save output for elevation views?
NO
Do you want to save output for plan views?
NO
Do you want another run?
NO
Stop
Exit
#DIR DOC


  Directory Structure of USR:DOC     2-Dec-82
  Directory Blocks  Available- 20, Used-  1

  RUN1A   VAR  [3]       2-Dec-82  16 49
  RUN1A   ELV  [7]       2-Dec-82  16 50
  RUN1A   PLN  [1]       2-Dec-82  16 50
  RUN1B   VAR  [3]       2-Dec-82  17 01


  Files-4,Blocks-14,Free-966,Largest-963

#[redacted]
 RUN MOOR05
```

```
Enter library name
DOC
Enter file name
RUN1A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
2



     ELEVATION VIEW
  output title    DOCUMENTATION 1A
  date      2-Dec-82        time     16 49 15
  # of segments          2
  xmin      -59 070       xmax       553 82
  ymin      -322 76       ymax       100 00

enter desired xmin
-60
enter desired xmax
554
enter desired ymin
-323
enter desired ymax
101
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
100
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 ELEVATION VIEW Time 16 49 15

DOCUMENTATION 1A

Vertical Axis y in feet divided by 1 Horizontal Axis x in feet divided by 1

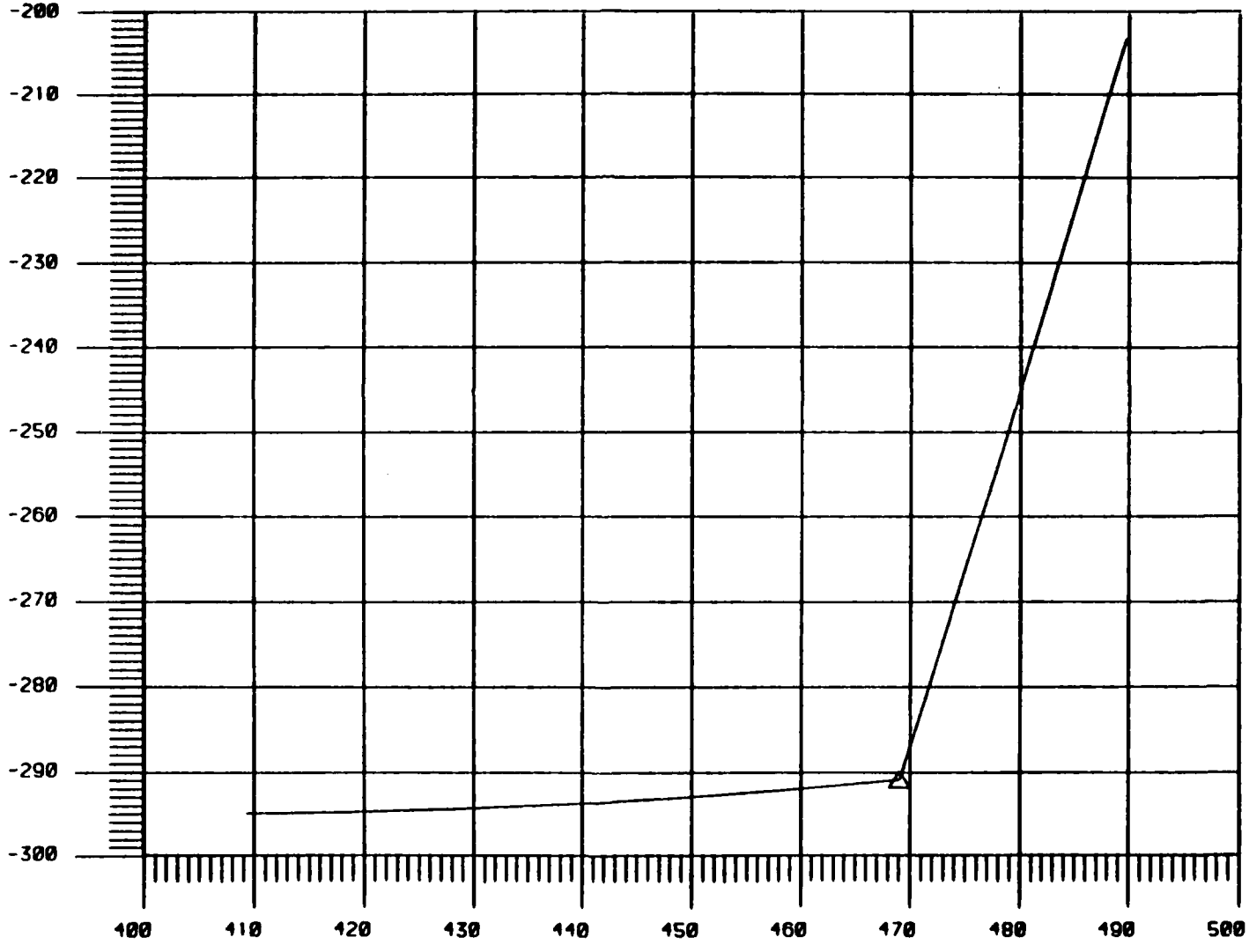


```
do you wish to plot this file again? (y or n)
YES



     ELEVATION VIEW
  output title    DOCUMENTATION 1A
  date      2-Dec-82        time     16 49 15
  # of segments          2
  xmin      -59 070       xmax      553 82
  ymin      -322 76       ymax      100 00

Do you want to use your previous selection of graph options?
NO

enter desired xmin
400
enter desired xmax
500
enter desired ymin
-300
enter desired ymax
-200
enter step size for x axis
10
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 ELEVATION VIEW Time 16 49 15

DOCUMENTATION 1A

Vertical Axis y in feet divided by 1 Horizontal Axis x in feet divided by 1

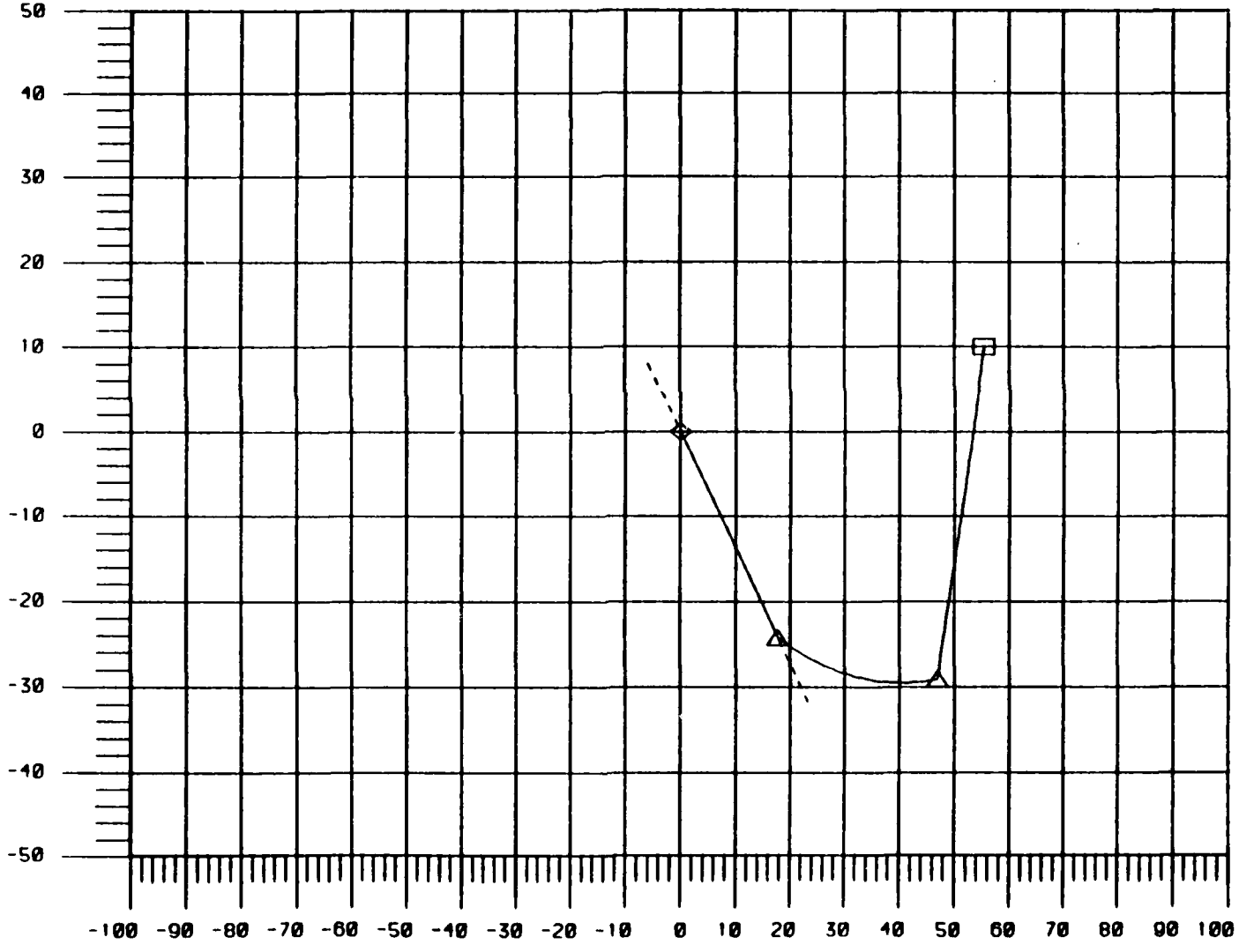


```
do you wish to plot this file again? (y or n)
YES



     ELEVATION VIEW
  output title    DOCUMENTATION 1A
  date      2-Dec-82          time     16 49 15
  # of segments          2
  xmin      -59 070         xmax       553 82
  ymin      -322 76         ymax       100 00

Do you want to use your previous selection of graph options?
NO

enter desired xmin
-1000
enter desired xmax
1000
enter desired ymin
-500
enter desired ymax
500
enter step size for x axis
100
enter scaling factor for x axis
10
enter step size for y axis
100
enter scaling factor for y axis
10
enter number of minor tick intervals per step for x axis
5
enter number of minor tick intervals per step for y axis
5
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 ELEVATION VIEW Time 16 49 15

DOCUMENTATION 1A

Vertical Axis y in feet divided by 10 Horizontal Axis x in feet divided by 10

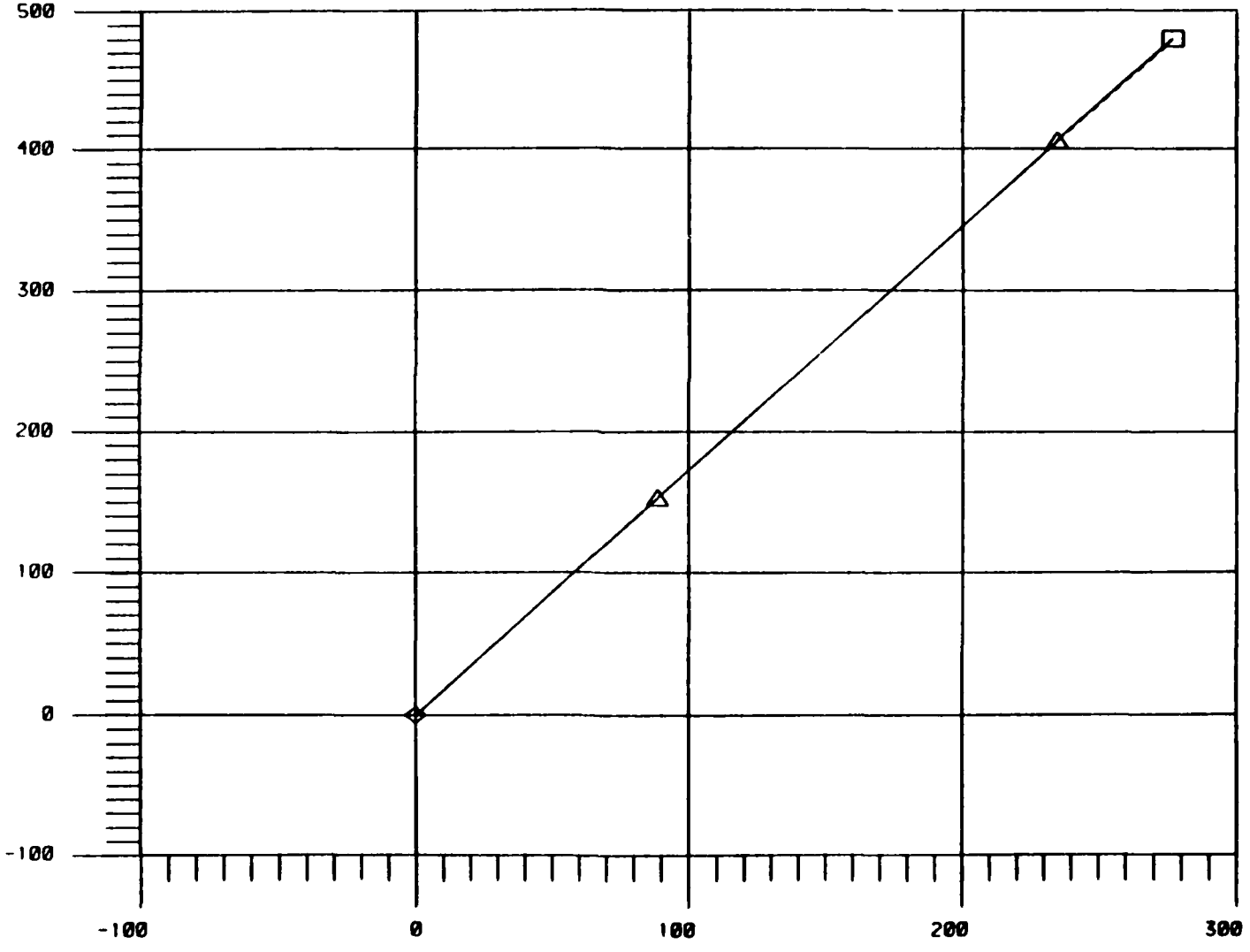


```
do you wish to plot this file again? (y or n)
NO
do you wish to plot another file? (y or n)
YES
Enter file name
RUN1A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
3



     PLAN VIEW
  output title    DOCUMENTATION 1A
  date      2-Dec-82        time     17 26 35
  # of segments          2
  xmin      0 00000       xmax      276 91
  ymin      0 00000       ymax      479 63

Do you want to use your previous selection of graph options?
NO

enter desired xmin
-1
enter desired xmax
277
enter desired ymin
-1
enter desired ymax
480
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
100
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 PLAN VIEW Time 17 20 35

DOCUMENTATION 1A

Vertical Axis z in feet divided by 1 Horizontal Axis x in feet divided by 1



```
do you wish to plot this file again? (y or n)
NO
do you wish to plot another file? (y or n)
NO
Stop
Exit
#DIR DOC


  Directory Structure of USR DOC     2-Dec-82
  Directory Blocks  Available= 20, Used=  1

  RUN1A   VAR  [3]       2-Dec-82  16 49
  RUN1A   ELV  [7]       2-Dec-82  16 50
  RUN1A   PLN  [1]       2-Dec-82  16 50
  RUN1B   VAR  [3]       2-Dec-82  17 01


  Files=4,Blocks=14,Free=966,Largest=966

#RUN MOOR04
```

```
Enter library name
DOC
Enter name of leg/riser file.
RUN1A
Do you want to see parameter list again?
NO
```

```
Enter minimum value of H (kips)
0
Enter maximum value of H (kips)
500
Enter value of H for reference point
35
Enter number of points to be plotted
251
```

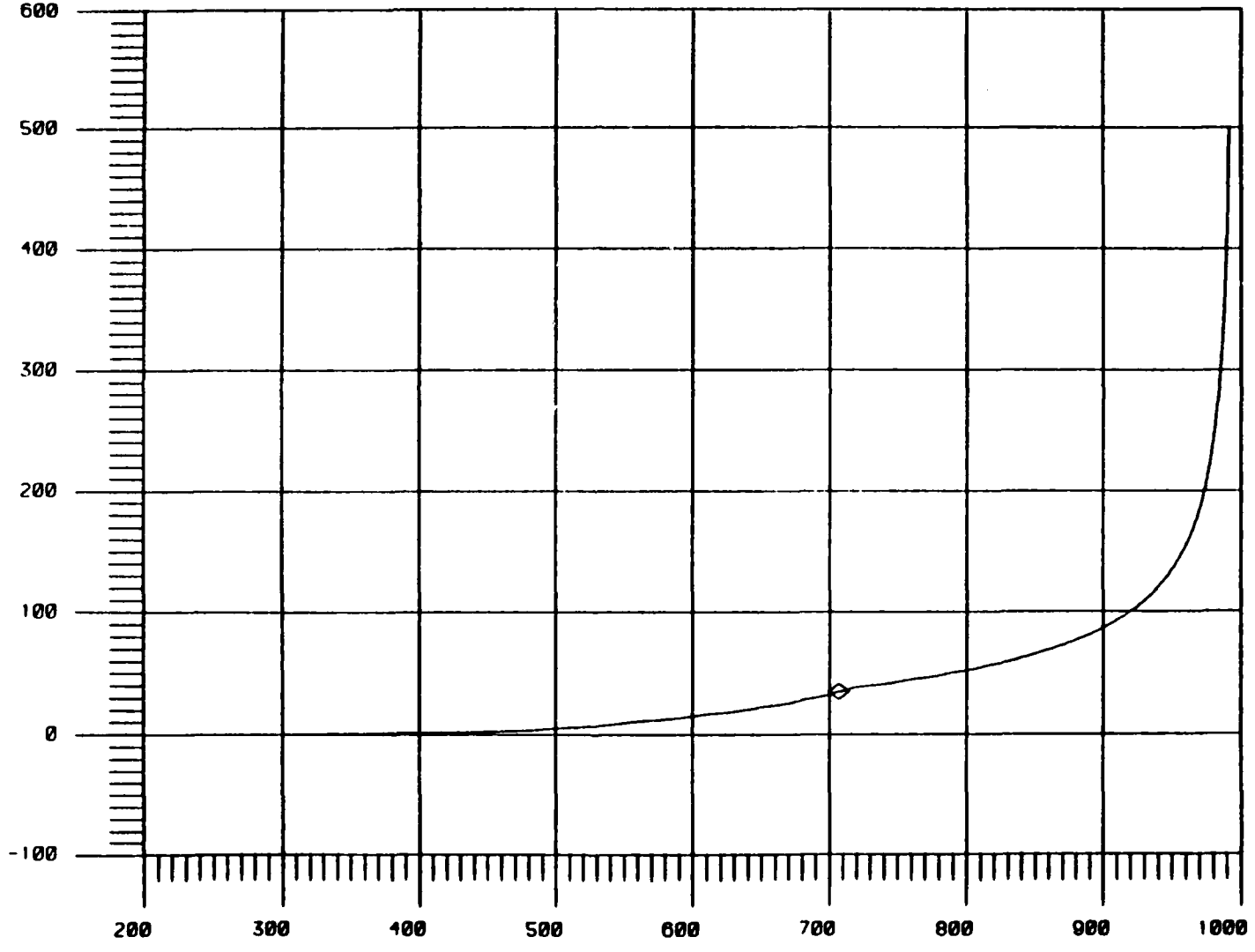
```
JUST COMPLETED POINT 100
JUST COMPLETED POINT 200
Do you want to compute another curve?
NO
Stop
Exit
#DIR DOC


  Directory Structure of USR DOC     2-Dec-82
  Directory Blocks  Available- 20, Used-  1

  RUN1A   VAR  [3]      2-Dec-82  16 49
  RUN1A   ELV  [7]      2-Dec-82  16 50
  RUN1A   PLN  [1]      2-Dec-82  16 50
  RUN1B   VAR  [3]      2-Dec-82  17 01
  RUN1A   LOC  [21]     2-Dec-82  17 41


  Files-5,Blocks-35,Free-945,Largest-944

#RUN MOOR05
```

```
Enter library name
DOC
Enter file name
RUN1A
Enter graph type
    1 - load displacement curve
    2 - elevation view
    3 - plan view
1



     LOAD DEFLECTION CURVE
  output title    DOCUMENTATION 1A
  date      2-Dec-82        time      17 41 59
  # of segments          1
  xmin       294 22       xmax       991 44
  ymin       0 00000      ymax       500 00

enter desired xmin
293
enter desired xmax
992
enter desired ymin
-1
enter desired ymax
501
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
100
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 LOAD DEFLECTION CURVE Time 17 41 59

DOCUMENTATION 1A

Vertical Axis h in kips divided by 1 Horizontal Axis x in feet divided by 1



```
do you wish to plot this file again? (y or n)
NO
do you wish to plot another file? (y or n)
NO
Stop
Exit
*
```

```
TITLE  DOCUMENTATION 2A
INPUT FILE  DOC/RUN2A VAR
 1        2          SOLUTION TYPE (-)
 2        3          LEG TYPE (-)
 3        30         ANCHOR SEPARATION (ft)
 4        0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5        0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6        90         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7        1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8        0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9        90 1       OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10        0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11        1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12        89 9       OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13        3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A    200        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A    38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A    15         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A    15         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A    68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A    2 5        WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A    165        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A    68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23        3          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B    200        LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B    38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B    15         WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B    15         LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B    68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B    2 5        WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B    165        LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B    68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33        ********** INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34        ********** FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3      5         WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4     45         LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4     100        LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H      20         HORIZONTAL LOAD (kips)
39        25         HORIZONTAL LOAD DIRECTION (deg)

40        U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41        U          BUOY DISPLACEMENT DIRECTION (deg)

42        U          BUOY X-COORDINATE (ft)
43        U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
```

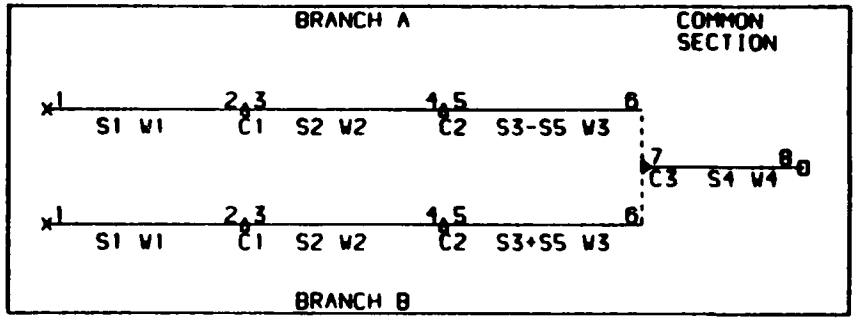
DOCUMENTATION 2A

INPUT

Original Input From File DOC/RUN2A VAR

Revised to File DOC/RUN2A VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds



LEG Type compound - spider plate		A	B
Anchor Separation		30 00	
Segments in Branch		3	3
Angle to Bottom		0 00	0 00
Length of Segment 1	S1	200 00	200 00
Linear Weight of Segment 1	W1	38 00	38 00
Weight of Sinker 1	C1	15 00	15 00
Length of Segment 2	S2	15 00	15 00
Linear Weight of Segment 2	W2	68 00	68 00
Weight of Sinker 2	C2	2 50	2 50
Start Length of Segment 3	S3	165 00	165 00
Linear Weight of Segment 3	W3	68 00	68 00
Friction Coefficient			
Weight of Equalizer/Spider	C3	0 50	
Length of Segment 4	S4	45 00	
Linear Weight of Segment 4	W4	100 00	

OCEAN BOTTOM

Floor Direction	-45 00		
Floor Slope	-8 05		
	---X---	-Depth-	---Z---
Point P1	0 00	90 00	0 00
Point P2	1 00	90 10	0 00
Point P3	0 00	89 90	1 00
Anchor A	0 00	88 50	15 00
Anchor B	0 00	91 50	-15 00
Origin	0 00	90 00	0 00

OCEAN SURFACE

Load Direction	25 00
Horizontal Load H	20 00
Projected Excursion	385 58
True Excursion	385 65

OUTPUT

UNKNOWN INPUTS

385 58 = Buoy Excursion

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	21 60						26 00							
VA	-3 21						-2 63							
C						0 00						0 00		
L	258 10						215 00						0 00	
H	4 56						15 45						20 00	
X	0 00		185 67		199 59		0 00		179 56		193 03		326 15	352 51
Y	1 50		-9 71		-10 56		-1 50		-10 69		-11 38		55 69	90 00
Z	15 00		88 50		94 01		-15 00		72 60		79 17		144 11	156 40
A	-3 21	-3 21	-3 21	-3 21	-3 21	60 41	-2 63	-2 63	-2 63	-2 63	6 03	39 76	46 92	52 31
V	-0 35	-0 32	-0 28	-0 27	-0 27	8 03	-0 76	-0 75	-0 71	-0 71	1 63	12 85	21 38	25 88
T	6 20	5 77	4 93	4 87	4 73	9 24	16 56	16 21	15 52	15 47	15 53	20 09	29 28	32 71

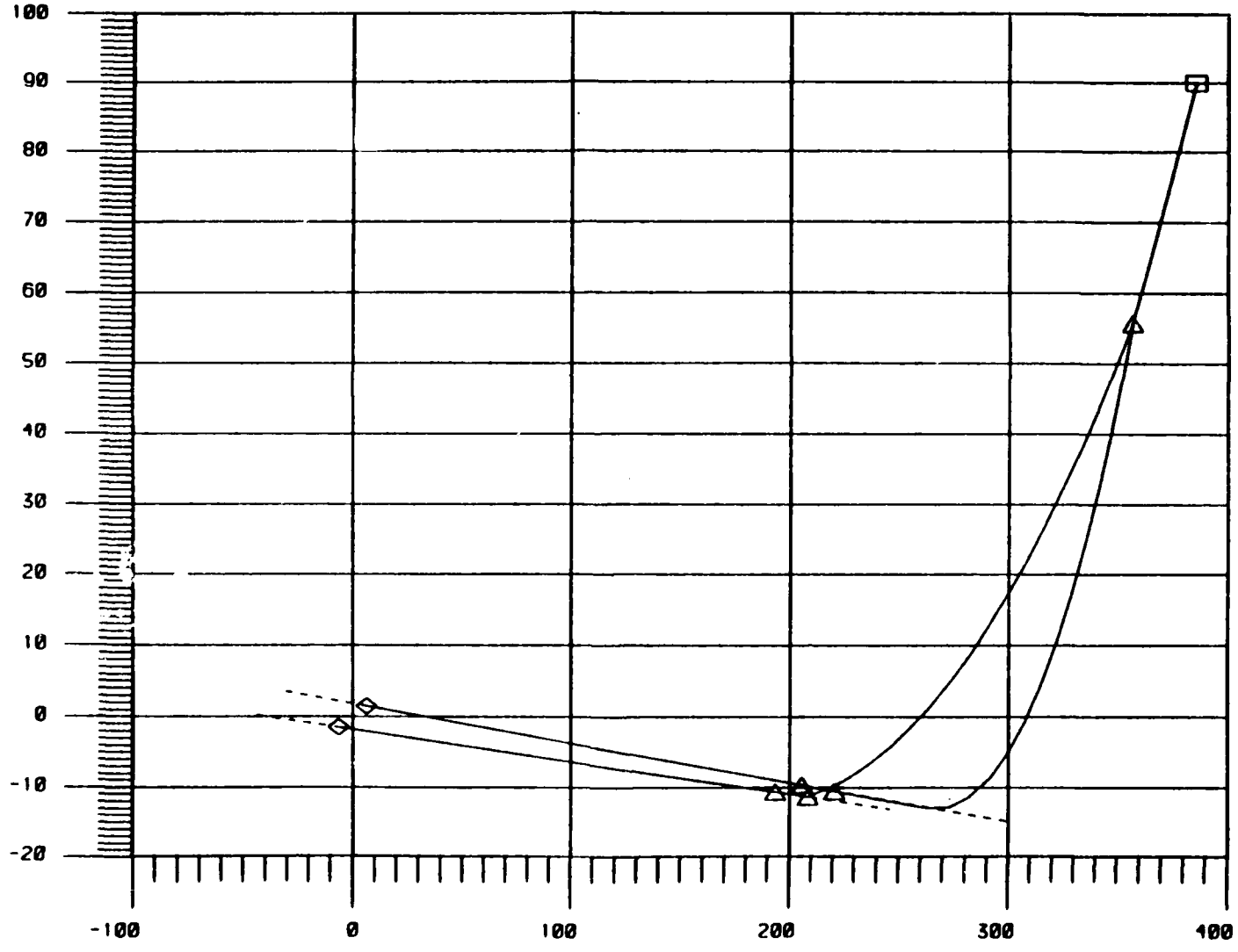
Solution Type Junction elevated, tension on both legs

```
Enter library name
DOC
Enter file name
RUN2A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
2



     ELEVATION VIEW
  output title    DOCUMENTATION 2A
  date      2-Dec-82        time     20 19 59
  # of segments          5
  xmin      -44 290       xmax      385 58
  ymin      -15 100       ymax      90 000

enter desired xmin
-45
enter desired xmax
386
enter desired ymin
-16
enter desired ymax
91
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 ELEVATION VIEW Time 20:19:59

DOCUMENTATION 2A

Vertical Axis y in feet divided by 1 Horizontal Axis x in feet divided by 1



```
do you wish to plot this file again? (y or n)
N
do you wish to plot another file? (y or n)
Y
Enter file name
RUN2A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
3
```

PLAN VIEW

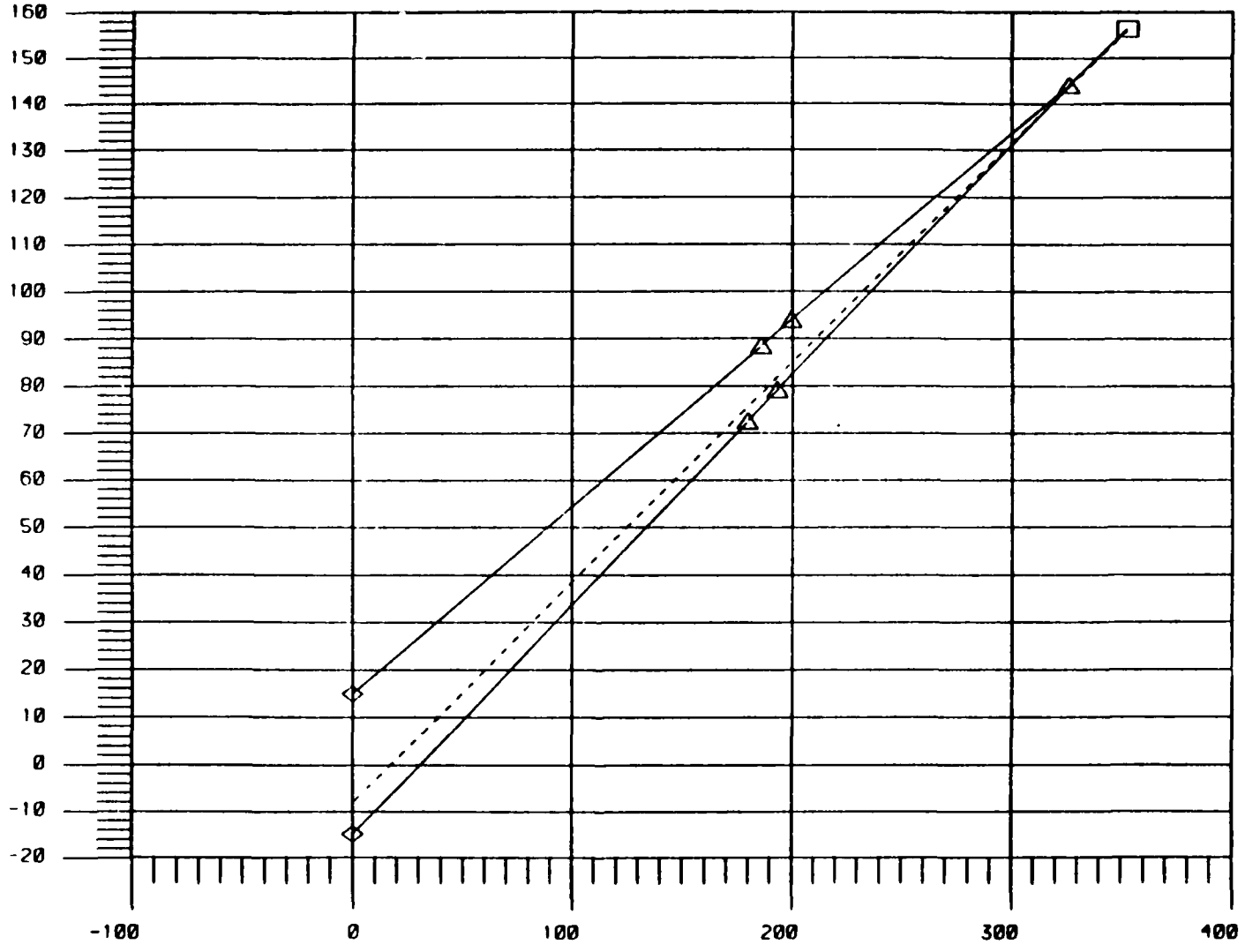
output title	DOCUMENTATION 2A		
date	2-Dec-82	time	20 19 59
# of segments	4		
xmin	0 00000	xmax	352 51
ymin	-15 000	ymax	156 40

```
Do you want to use your previous selection of graph options?
NO

enter desired xmin
-1
enter desired xmax
353
enter desired ymin
-16
enter desired ymax
157
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
5
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 PLAN VIEW Time 20 19 59

DOCUMENTATION 2A

Vertical Axis z in feet divided by 1 Horizontal Axis x in feet divided by 1



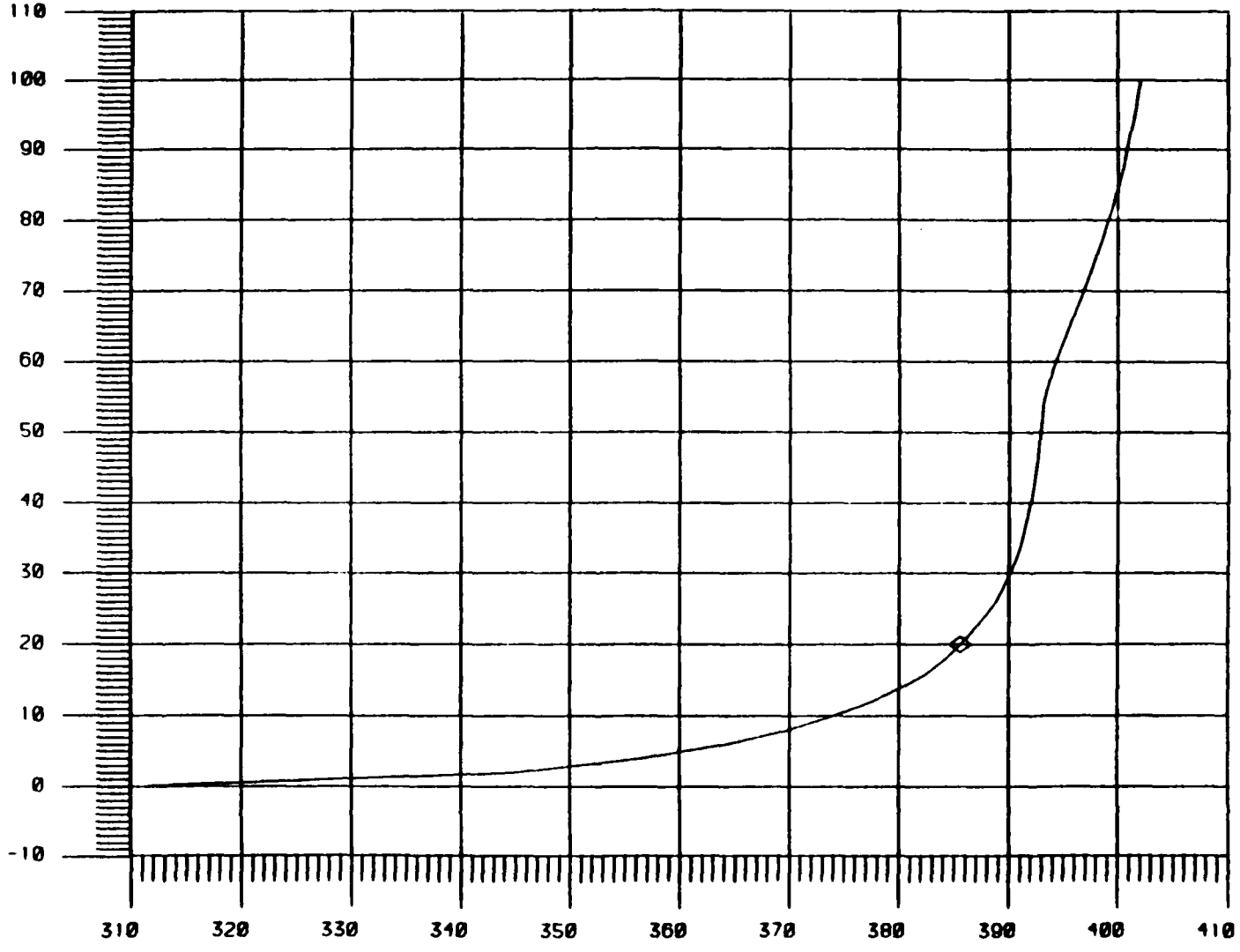
```
Enter minimum value of H (kips)
0
Enter maximum value of H (kips)
100
Enter value of H for reference point
20
Enter number of points to be plotted
51
```

```
Enter library name
DOC
Enter file name
RUN2A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
1



     LOAD DEFLECTION CURVE
  output title    DOCUMENTATION 2A
  date      2-Dec-82        time     20 41  6
  # of segments          1
  xmin       311 50       xmax       402 09
  ymin      0 00000       ymax       100 00

enter desired xmin
311
enter desired xmax
403
enter desired ymin
-1
enter desired ymax
101
enter step size for x axis
10
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a g. d? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 LOAD DEFLECTION CURVE Time 20 41 6

DOCUMENTATION 2A

Vertical Axis h in kips divided by 1 Horizontal Axis x in feet divided by 1



```
TITLE  DOCUMENTATION 2B
INPUT FILE  DOC/RUN2A VAR
 1        2          SOLUTION TYPE (-)
 2        3          LEG TYPE (-)
 3        30         ANCHOR SEPARATION (ft)
 4        0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5        0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6        90         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7        1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8        0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9        90 1       OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10        0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11        1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12        89 9       OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13        3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A    200        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A    38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A    15         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A    15         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A    68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A    2 5        WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A    165        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A    68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23        3          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B    200        LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B    38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B    15         WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B    15         LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B    68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B    2 5        WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B    165        LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B    68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33        ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34        ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3      5         WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4     45         LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4     100        LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H      U          HORIZONTAL LOAD (kips)
39        U          HORIZONTAL LOAD DIRECTION (deg)

40        385 58     ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41        25         BUOY DISPLACEMENT DIRECTION (deg)

42        U          BUOY X-COORDINATE (ft)
43        U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN2B
```

Date 2-Dec-82 SUMMARY Time 20 58 51

DOCUMENTATION 2B

INPUT

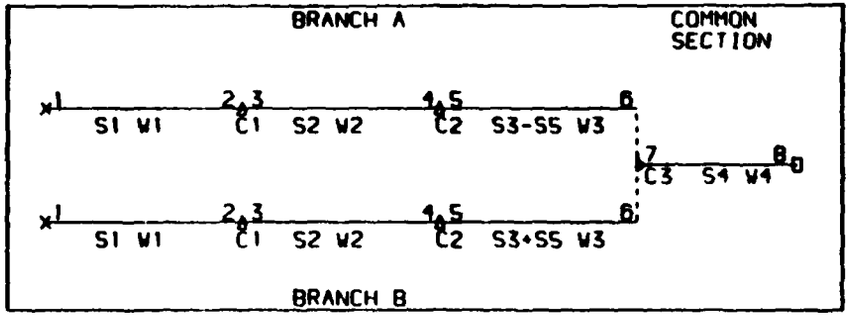
Original Input From File DOC/RUN2A VAR

Revised to File DOC/RUN2B VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEG

Type compound - spider plate		---A---	---B---
Anchor Separation		30 00	
Segments in Branch		3	3
Angle to Bottom		0 00	0 00
Length of Segment 1	S1	200 00	200 00
Linear Weight of Segment 1	W1	38 00	38 00
Weight of Sinker 1	C1	15 00	15 00
Length of Segment 2	S2	15 00	15 00
Linear Weight of Segment 2	W2	68 00	68 00
Weight of Sinker 2	C2	2 50	2 50
Start Length of Segment 3	S3	165 00	165 00
Linear Weight of Segment 3	W3	68 00	68 00
Friction Coefficient			
Weight of Equalizer/Spider	C3	0 50	
Length of Segment 4	S4	45 00	
Linear Weight of Segment 4	W4	100 00	



OCEAN BOTTOM

Floor Direction		-45 00	
Floor Slope		-8 05	
	---X---	-Depth-	---Z---
Point P1	0 00	90 00	0 00
Point P2	1 00	90 10	0 00
Point P3	0 00	89 90	1 00
Anchor A	0 00	88 50	15 00
Anchor B	0 00	91 50	-15 00
Origin	0 00	90 00	0 00

OCEAN SURFACE

Load Direction	25 00
Horizontal Load H	20 00
Projected Excursion	385 58
True Excursion	385 65

OUTPUT

UNKNOWN INPUTS

20 00 - Horizontal Load Magnitude

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	21 60						26 00							
VA	-3 21						-2 63							
C						0 00						0 00		
L	258 10						215 00						0 00	
H	4 56						15 45						20 00	
X	0 00		185 67		199 59		0 00		179 56		193 03		326 15	352 51
Y	1 50		-9 71		-10 56		-1 50		-10 69		-11 38		55 69	90 00
Z	15 00		88 50		94 01		-15 00		72 60		79 17		144 11	156 40
A	-3 21	-3 21	-3 21	-3 21	-3 21	60 41	-2 63	-2 63	-2 63	-2 63	6 03	39 76	46 92	52 31
V	-0 35	-0 32	-0 28	-0 27	-0 27	8 03	-0 76	-0 75	-0 71	-0 71	1 63	12 85	21 38	25 88
T	6 20	5 77	4 93	4 87	4 73	9 24	16 56	16 21	15 52	15 47	15 53	20 09	29 28	32 71

Solution Type Junction elevated; tension on both legs

```
TITLE  DOCUMENTATION 2C
INPUT FILE  DOC/RUN2A VAR
 1       2          SOLUTION TYPE (-)
 2       3          LEG TYPE (-)
 3       30         ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       90         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       90 1       OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       89 9       OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   200        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   15         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   15         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   2 5        WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   165        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       3          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   200        LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   15         WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   15         LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   2 5        WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   165        LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       ********** INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       ********** FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3     5         WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    45         LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    100        LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     U          HORIZONTAL LOAD (kips)
39       U          HORIZONTAL LOAD DIRECTION (deg)

40       U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       U          BUOY DISPLACEMENT DIRECTION (deg)

42       352 51     BUOY X-COORDINATE (ft)
43       156 40     BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN2C
```

Date 2-Dec-82 SUMMARY Time 21 2 13

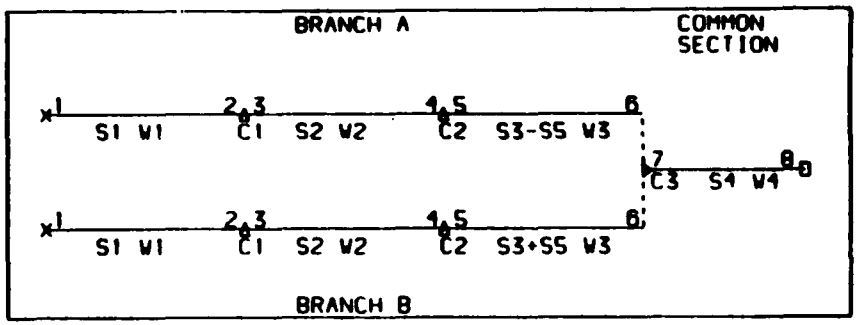
DOCUMENTATION 2C

INPUT

Original Input From File DOC/RUN2A VAR

Revised to File DOC/RUN2C VAR

Units: Angles - Degrees; Distances - Feet; Linear Weights - Pounds/Foot; Weights - Kilopounds; Forces - Kilopounds



LEG Type compound - spider plate		A	B
Anchor Separation		30 00	
Segments in Branch		3	3
Angle to Bottom		0 00	0 00
Length of Segment 1	S1	200 00	200 00
Linear Weight of Segment 1	W1	38 00	38 00
Weight of Sinker 1	C1	15 00	15 00
Length of Segment 2	S2	15 00	15 00
Linear Weight of Segment 2	W2	68 00	68 00
Weight of Sinker 2	C2	2 50	2 50
Start Length of Segment 3	S3	165 00	165 00
Linear Weight of Segment 3	W3	68 00	68 00
Friction Coefficient			
Weight of Equalizer/Spider	C3	0 50	
Length of Segment 4	S4	45 00	
Linear Weight of Segment 4	W4	100 00	

OCEAN BOTTOM

Floor Direction -45 00

Floor Slope -8 05

	---X---	-Depth-	---Z---
Point P1	0 00	90 00	0 00
Point P2	1 00	90 10	0 00
Point P3	0 00	89 90	1 00
Anchor A	0 00	88 50	15 00
Anchor B	0 00	91 50	-15 00
Origin	0 00	90 00	0 00

OCEAN SURFACE

Load Direction	25 00
Horizontal Load H	20 00
Projected Excursion	385 58
True Excursion	385 65

OUTPUT

UNKNOWN INPUTS

20 00 - Horizontal Load Magnitude 25 00 - Horizontal Load Direction

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	21 60						26 00							
VA	-3 21						-2 63							
C						0 00						0 00		
L	258 10						215 00						0 00	
H	4 56						15 45						20 00	
X	0 00		185 67		199 59		0 00		179 56		193 03		326 15	352 51
Y	1 50		-9 71		-10 56		-1 50		-10 69		-11 38		55 69	00 00
Z	15 00		88 50		94 01		-15 00		72 60		79 17		144 11	156 40
A	-3 21	-3 21	-3 21	-3 21	-3 21	60 41	-2 63	-2 63	-2 63	-2 63	6 03	39 76	46 92	52 31
V	-0 35	-0 32	-0 28	-0 27	-0 27	8 03	-0 76	-0 75	-0 71	-0 71	1 63	12 85	21 38	25 88
T	6 20	5 77	4 93	4 87	4 73	9 24	16 56	16 21	15 52	15 47	15 53	20 09	29 28	32 71

Solution Type Junction elevated, tension on both legs

```
TITLE  DOCUMENTATION 3A
INPUT FILE  DOC/RUN2A VAR
 1        2          SOLUTION TYPE (-)
 2        2          LEG TYPE (-)
 3        30         ANCHOR SEPARATION (ft)
 4        0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5        0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6        90         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7        1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8        0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9        90 1       OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10        0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11        1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12        89 9       OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13        3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A    200        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A    38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A    15         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A    15         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A    68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A    2 5        WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A    165        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A    68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23        3          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B    200        LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B    38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B    15         WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B    15         LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B    68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B    2 5        WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B    165        LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B    68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33        0          INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34        0 1        FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3      5         WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4     45         LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4     100        LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H      20         HORIZONTAL LOAD (kips)
39        25         HORIZONTAL LOAD DIRECTION (deg)

40        U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41        U          BUOY DISPLACEMENT DIRECTION (deg)

42        U          BUOY X-COORDINATE (ft)
43        U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN3A
```

Date 2-Dec-82 SUMMARY Time 21 6 9

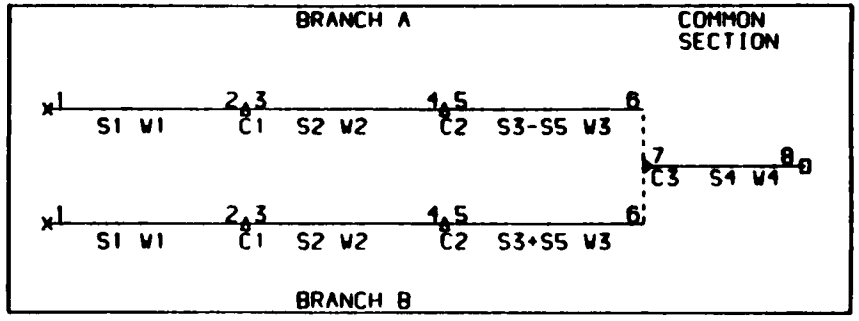
DOCUMENTATION 3A

INPUT

Original Input From File DOC/RUN2A VAR

Revised to File DOC/RUN3A VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds



LEC

Type compound - equalizer		---A---	---B---
Anchor Separation		30 00	
Segments in Branch		3	3
Angle to Bottom		0 00	0 00
Length of Segment 1	S1	200 00	200 00
Linear Weight of Segment 1	W1	38 00	38 00
Weight of Sinker 1	C1	15 00	15 00
Length of Segment 2	S2	15 00	15 00
Linear Weight of Segment 2	W2	68 00	68 00
Weight of Sinker 2	C2	2 50	2 50
Start Length of Segment 3	S3	165 00	165 00
Linear Weight of Segment 3	W3	68 00	
Friction Coefficient		0 10	
Weight of Equalizer/Spider	C3	0 50	
Length of Segment 4	S4	45 00	
Linear Weight of Segment 4	W4	100 00	

OCEAN BOTTOM

Floor Direction		-45 00	
Floor Slope		-8 05	
	---X---	-Depth-	---Z---
Point P1	0 00	90 00	0 00
Point P2	1 00	90 10	0 00
Point P3	0 00	89 90	1 00
Anchor A	0 00	88 50	15 00
Anchor B	0 00	91 50	-15 00
Origin	0 00	90 00	0 00

OCEAN SURFACE

Load Direction	25 00
Horizontal Load H	20 00
Projected Excursion	388 29
True Excursion	388 30

OUTPUT

UNKNOWN INPUTS

4 20 - Final Slippage S5

388 29 - Buoy Excursion

HA - Floor Horizontal Angle
H - Horizontal Force
A - Catenary Horizontal Angle
VA - Floor Vertical Angle
X - X Coordinate
V - Vertical Force
C - Chain Coiled on Bottom
Y - Y Coordinate
T - Tension
L - Length Along Bottom
Z - Z Coordinate

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	22 35						26 70							
VA	-3 12						-2 54							
C						0 00						0 00		
L	228 70						215 00						0 00	
H	7 84						12 17						20 00	
X	0 00		184 70		198 55		0 00		178 49		191 88		326 79	353 06
Y	1 50		-9 37		-10 19		-1 50		-10 37		-11 03		55 61	90 00
Z	15 00		90 95		96 65		-15 00		74 79		81 52		149 38	161 63
A	-3 12	-3 12	-3 12	-3 12	-3 12	50 70	-2 54	-2 54	-2 54	-2 54	-0 31	43 22	47 09	52 45
V	-0 51	-0 48	-0 44	-0 44	-0 43	9 58	-0 59	-0 58	-0 55	-0 54	-0 07	11 44	21 52	26 02
T	9 32	8 91	8 09	8 04	7 90	12 38	13 32	12 99	12 32	12 28	12 18	16 71	29 38	32 82

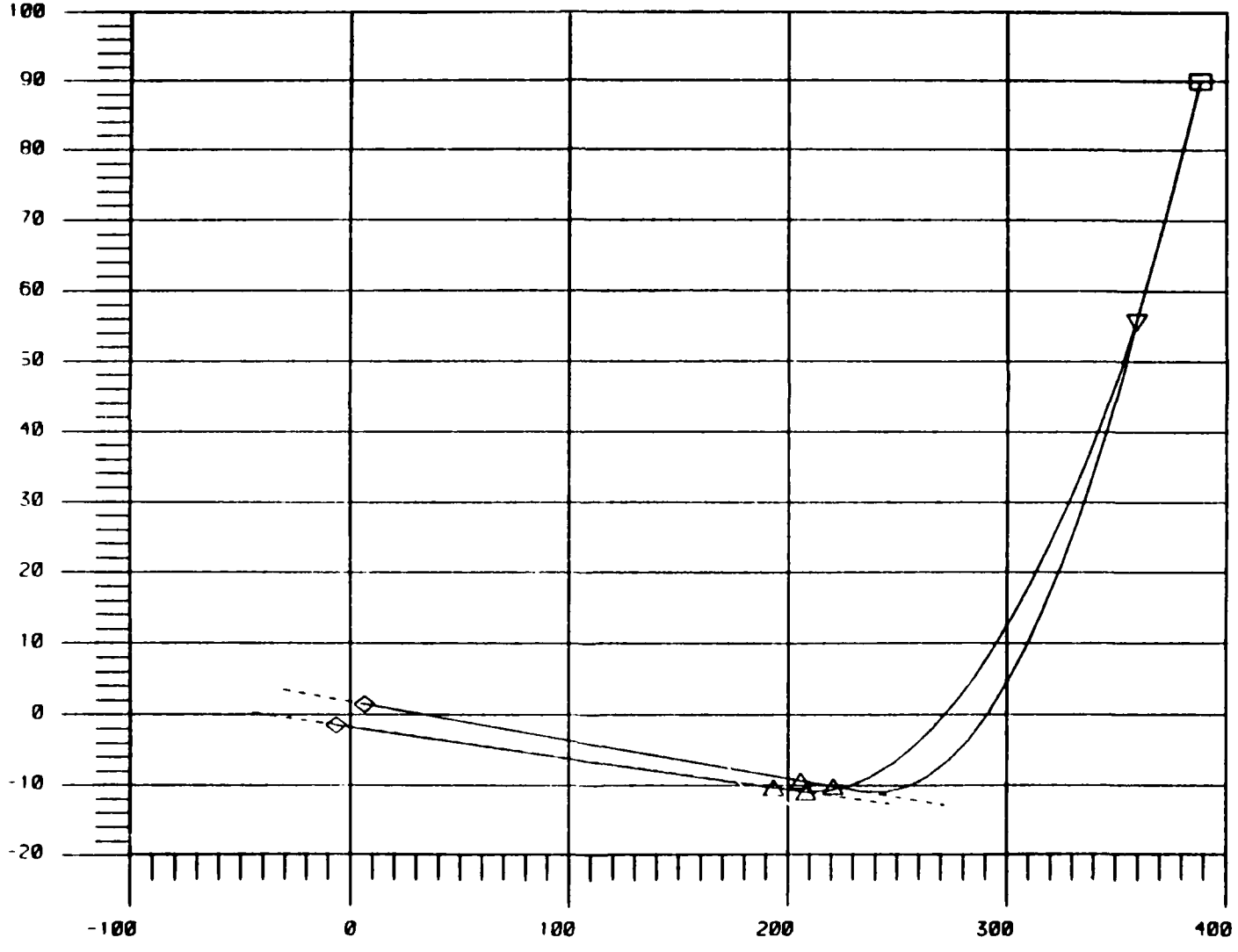
Solution Type Junction elevated, tension on both legs

```
Enter library name
OOC
Enter file name
RUN3A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
2



     ELEVATION VIEW
  output title    DOCUMENTATION 3A
  date      2-Dec-82        time     21  6  9
  # of segments          5
  xmin      -44 700       xmax      388 29
  ymin      -12 980       ymax      90 000

enter desired xmin
-45
enter desired xmax
389
enter desired ymin
-13
enter desired ymax
91
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 ELEVATION VIEW Time 21 6 9

DOCUMENTATION 3A

Vertical Axis y in feet divided by 1 Horizontal Axis x in feet divided by 1

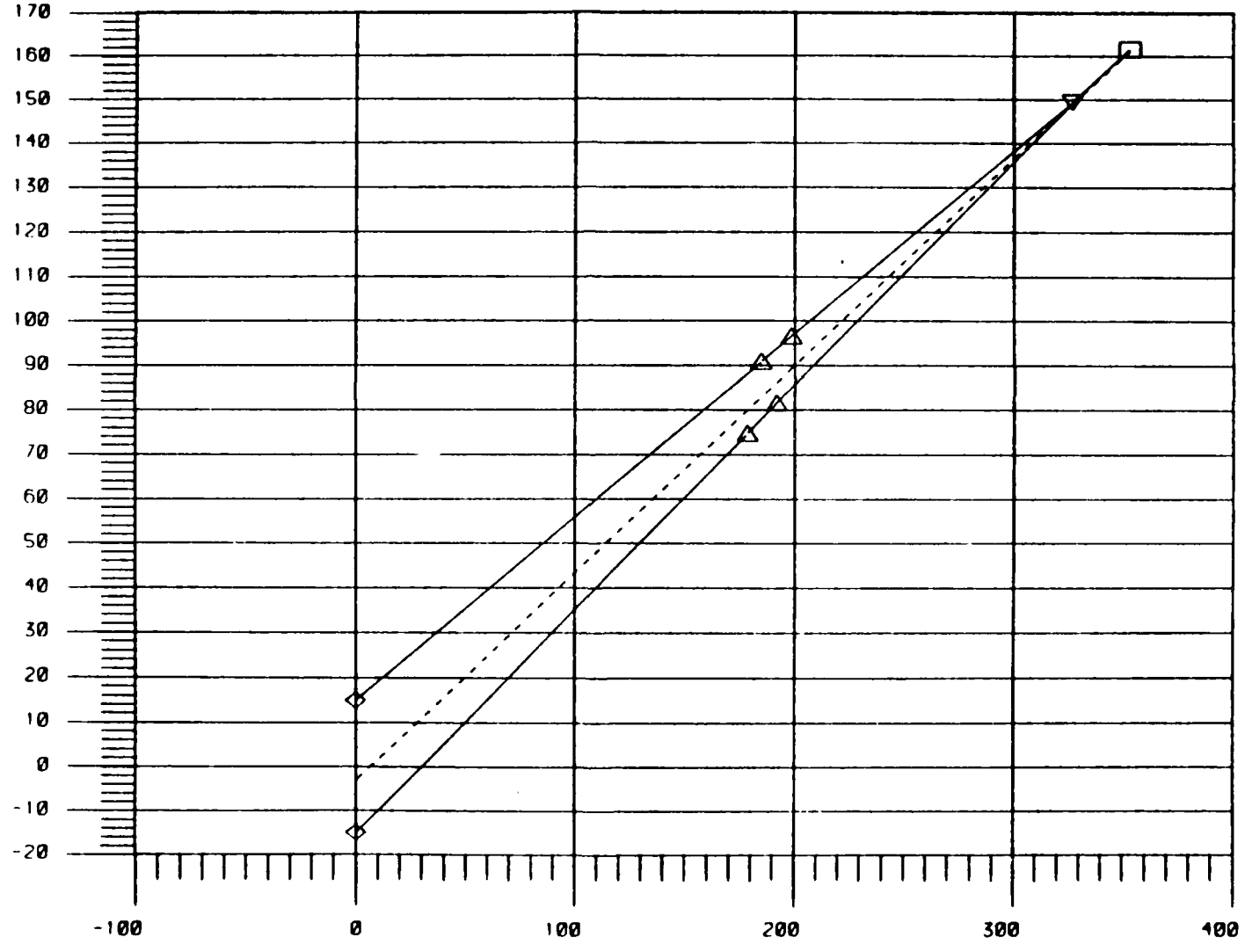


```
do you wish to plot this file again? (y or n)
NO
Do you wish to plot another file? (y or n)
YES
Enter file name
RUN3A
Enter graph type
    1 - load displacement curve
    2 - elevation view
    3 - plan view
3



     PLAN VIEW
  output title    DOCUMENTATION 3A
  date      2-Dec-82        time     21  6  9
  # of segments          4
  xmin      0 00000       xmax      353 06
  ymin     -15 000        ymax      161 63

Do you want to use your previous selection of graph options?
NO

enter desired xmin
-1
enter desired xmax
354
enter desired ymin
-16
enter desired ymax
162
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
5
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 PLAN VIEW Time 21 6 9

DOCUMENTATION 3A

Vertical Axis z in feet divided by 1 Horizontal Axis x in feet divided by 1



```
Enter minimum value of H (kips)
0
Enter maximum value of H (kips)
50
Enter value of H for reference point
20
Enter number of points to be plotted
6
```

```
Enter library name
DOC
Enter file name
RUN3A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
1
```

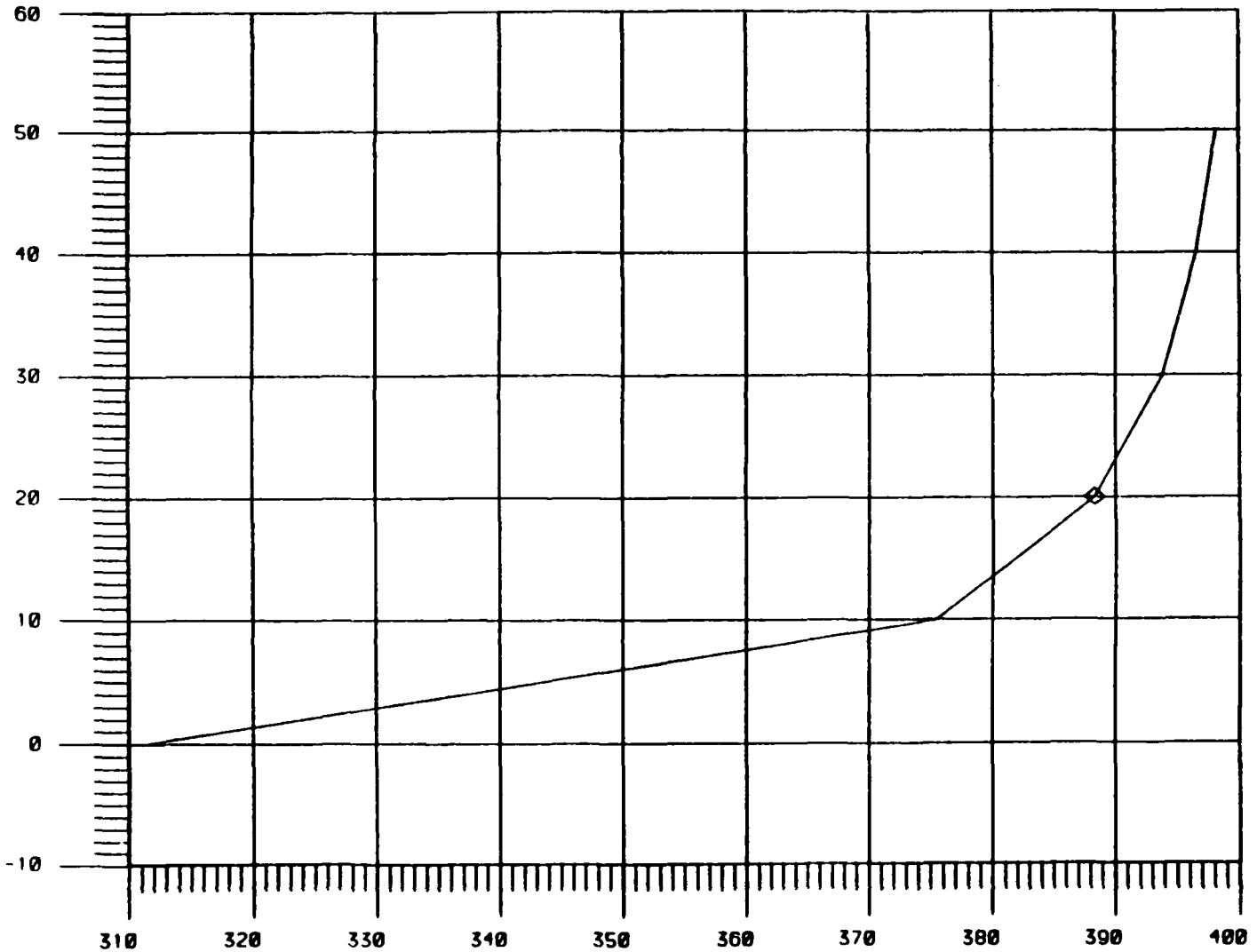
LOAD DEFLECTION CURVE

```
 output title    DOCUMENTATION 3A
 date     2-Dec-82        time     21 16 51
 # of segments          1
 xmin       311 50       xmax      398 20
 ymin     0 00000        ymax      50 000

enter desired xmin
310
enter desired xmax
399
enter desired ymin
-1
enter desired ymax
51
enter step size for x axis
10
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 LOAD DEFLECTION CURVE Time 21 16 51

DOCUMENTATION 3A

Vertical Axis h in kips divided by 1 Horizontal Axis x in feet divided by 1



```
TITLE  DOCUMENTATION 3B
INPUT FILE  DOC/RUN3A VAR
 1       2          SOLUTION TYPE (-)
 2       2          LEG TYPE (-)
 3       30         ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       90         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       90 1       OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       89 9       OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   200        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   15         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   15         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   2 5        WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   165        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       3          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   200        LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   15         WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   15         LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   2 5        WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   165        LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       0          INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       0 1        FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3     5         WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    45         LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    100        LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     U          HORIZONTAL LOAD (kips)
39       U          HORIZONTAL LOAD DIRECTION (deg)

40       388 29     ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       25         BUOY DISPLACEMENT DIRECTION (deg)

42       U          BUOY X-COORDINATE (ft)
43       U          BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN3B
```

Date 2-Dec-82 SUMMARY Time 21 30 58

DOCUMENTATION 3B

INPUT

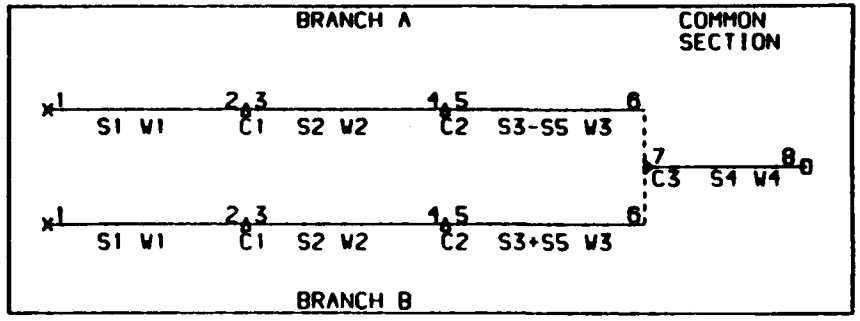
Original Input From File DOC/RUN3A VAR

Revised to File DOC/RUN3B VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEG

Type compound - equalizer		---A---	---B---
Anchor Separation		30 00	
Segments in Branch		3	3
Angle to Bottom		0 00	0 00
Length of Segment 1	S1	200 00	200 00
Linear Weight of Segment 1	W1	38 00	38 00
Weight of Sinker 1	C1	15 00	15 00
Length of Segment 2	S2	15 00	15 00
Linear Weight of Segment 2	W2	68 00	68 00
Weight of Sinker 2	C2	2 50	2 50
Start Length of Segment 3	S3	165 00	165 00
Linear Weight of Segment 3	W3	68 00	
Friction Coefficient		0 10	
Weight of Equalizer/Spider	C3	0 50	
Length of Segment 4	S4	45 00	
Linear Weight of Segment 4	W4	100 00	



OCEAN BOTTOM

Floor Direction		-45 00
Floor Slope		-8 05
	---X---	-Depth- ---Z---
Point P1	0 00	90 00 0 00
Point P2	1 00	90 10 0 00
Point P3	0 00	89 90 1 00
Anchor A	0 00	88 50 15 00
Anchor B	0 00	91 50 -15 00
Origin	0 00	90 00 0 00

OCEAN SURFACE

Load Direction	25 00
Horizontal Load H	20 00
Projected Excursion	388 29
True Excursion	388 30

OUTPUT

UNKNOWN INPUTS

4 20 - Final Slippage S5

20 00 - Horizontal Load Magnitude

HA - Floor Horizontal Angle
H - Horizontal Force
A - Catenary Horizontal Angle
VA - Floor Vertical Angle
X - X Coordinate
V - Vertical Force
C - Chain Coiled on Bottom
Y - Y Coordinate
T - Tension
L - Length Along Bottom
Z - Z Coordinate

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	22 35						26 70							
VA	-3 12						-2 54							
C						0 00						0 00		
L	228 71						215 00						0 00	
H	7 84						12 17						20 00	
X	0 00		184 70		198 55		0 00		178 49		191 88		326 78	353 06
Y	1 50		-9 37		-10 19		-1 50		-10 37		-11 03		55 61	90 00
Z	15 00		90 95		96 65		-15 00		74 79		81 52		149 38	161 63
A	-3 12	-3 12	-3 12	-3 12	-3 12	50 70	-2 54	-2 54	-2 54	-2 54	-0 31	43 22	47 09	52 45
V	-0 51	-0 48	-0 44	-0 44	-0 43	9 57	-0 59	-0 58	-0 55	-0 54	-0 07	11 44	21 51	26 01
T	9 32	8 91	8 09	8 04	7 90	12 37	13 32	12 98	12 32	12 27	12 17	16 70	29 37	32 81

Solution Type: Junction elevated, tension on both legs

```
TITLE  DOCUMENTATION 3C
INPUT FILE  DOC/RUN3A VAR
 1       2          SOLUTION TYPE (-)
 2       2          LEG TYPE (-)
 3       30         ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       90         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       90 1       OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       89 9       OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
15 S1A   200        LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   15         WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   15         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   2 5        WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   165        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       3          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   200        LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   38         LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   15         WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   15         LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   68         LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   2 5        WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   165        LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   68         LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       0          INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       0 1        FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3     5         WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    45         LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    100        LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     U          HORIZONTAL LOAD (kips)
39       U          HORIZONTAL LOAD DIRECTION (deg)

40       U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
41       U          BUOY DISPLACEMENT DIRECTION (deg)

42       353 06     BUOY X-COORDINATE (ft)
43       181 63     BUOY Z-COORDINATE (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN3C
```

Date 2-Dec-82 SUMMARY Time 21 45 46

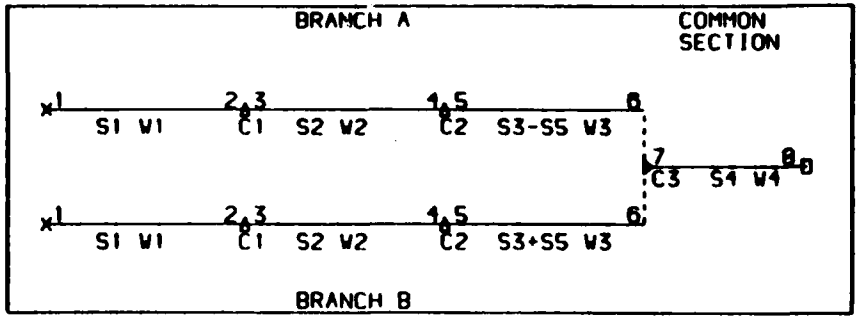
DOCUMENTATION 3C

INPUT

Original Input From File DOC/RUN3A VAR

Revised to File DOC/RUN3C VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds



LEG

Type compound - equalizer		---A---	---B---
Anchor Separation		30 00	
Segments in Branch		3	3
Angle to Bottom		0 00	0 00
Length of Segment 1	S1	200 00	200 00
Linear Weight of Segment 1	W1	38 00	38 00
Weight of Sinker 1	C1	15 00	15 00
Length of Segment 2	S2	15 00	15 00
Linear Weight of Segment 2	W2	68 00	68 00
Weight of Sinker 2	C2	2 50	2 50
Start Length of Segment 3	S3	165 00	165 00
Linear Weight of Segment 3	W3	68 00	
Friction Coefficient		0 10	
Weight of Equalizer/Spider	C3	0 50	
Length of Segment 4	S4	45 00	
Linear Weight of Segment 4	W4	100 00	

OCEAN BOTTOM

Floor Direction		-45 00	
Floor Slope		-8 05	
	---X---	-Depth-	---Z---
Point P1	0 00	90 00	0 00
Point P2	1 00	90 10	0 00
Point P3	0 00	89 90	1 00
Anchor A	0 00	88 50	15 00
Anchor B	0 00	91 50	-15 00
Origin	0 00	90 00	0 00

OCEAN SURFACE

Load Direction	25 00
Horizontal Load H	19 99
Projected Excursion	388 29
True Excursion	388 30

OUTPUT

UNKNOWN INPUTS

4 20 - Final Slippage S5 19 99 - Horizontal Load Magnitude 25 00 - Horizontal Load Direction

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	22 35						26 70							
VA	-3 12						-2 54							
C						0 00						0 00		
L	228 72						215 00						0 00	
H	7 84						12 17						19 99	
X	0 00		184 70		198 55		0 00		178 49		191 88		326 78	353 00
Y	1 50		-9 37		-10 19		-1 50		-10 37		-11 03		55 60	90 00
Z	15 00		90 95		96 65		-15 00		74 79		81 52		149 38	161 63
A	-3 12	-3 12	-3 12	-3 12	-3 12	50 70	-2 54	-2 54	-2 54	-2 54	-0 31	43 22	47 10	52 45
V	-0 51	-0 48	-0 44	-0 44	-0 43	9 57	-0 59	-0 58	-0 55	-0 54	-0 07	11 44	21 51	26 01
T	9 32	8 91	8 09	8 03	7 90	12 37	13 32	12 98	12 32	12 27	12 17	16 70	29 37	32 81

Solution Type Junction elevated, tension on both legs

```
Enter library name
DOC
Do you have a file of input values?
NO
Enter leg/riser title
DOCUMENTATION 4A
Enter solution type (unitless)
     1 - taut leg procedure
     2 - slack leg procedure
1
Enter X-Coordinate of Point 1 (feet)
0
Enter Z-Coordinate of Point 1 (feet)
0
Enter D-Coordinate of Point 1 (feet)
27
Enter X-Coordinate of Point 2 (feet)
1
Enter Z-Coordinate of Point 2 (feet)
0
Enter D-Coordinate of Point 2 (feet)
27
Enter X-Coordinate of Point 3 (feet)
0
Enter Z-Coordinate of Point 3 (feet)
1
Enter D-Coordinate of Point 3 (feet)
27

Specify two of the remaining variables
(other than number of segments or load direction)
as unknown by entering the code U

Enter number of segments in branch A (unitless)
3
Enter slope of chain at anchor A (A1A) (degrees)
3
Enter length of first (lowest) segment of A (S1A)  (feet)
22 5
Enter linear weight of first segment of A (W1A)  (pounds/foot)
0 216
Enter weight of first sinker on A (C1A) (kips)
1 7
Enter length of second segment of A (S2A) (feet)
36
Enter linear weight of second segment of A (W2A)  (pounds/foot)
1 609
Enter weight of second sinker on A (C2A) (kips)
-1 83
Enter length of third segment of A (S3A) (feet)
250
Enter linear weight of third segment of A (W3A)  (pounds/foot)
0 1
Enter magnitude of horizontal load (H) (kilopounds)
U
Enter angle from neutral direction to horizontal load vector (degrees)
-60
```

```
Enter horizontal distance from origin to buoy (feet)
U
Do you want to see parameter list again?
YES
```

```
TITLE  DOCUMENTATION 4A
INPUT FILE  NONE
 1        1          SOLUTION TYPE (-)
 2        1          LEG TYPE (-)
 3        ********* ANCHOR SEPARATION (ft)
 4        0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5        0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6        27         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7        1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8        0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9        27         OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10        0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11        1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12        27         OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13        3          NUMBER OF SEGMENTS IN BRANCH A (-)
14 A1A    3          ANGLE FROM OCEAN FLOOR TO CHAIN AT ANCHOR A (deg)
15 S1A    22 5       LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A    8 216      LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A    1 7        WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A    38         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A    1 609      LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A    -1 83      WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A    250        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A    0 1        LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23        *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B    ********* LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B    ********* LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B    ********* WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B    ********* LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B    ********* LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B    ********* WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B    ********* LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B    ********* LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33        ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34        ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3     ********* WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4     ********* LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4     ********* LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H      U          HORIZONTAL LOAD (kips)
39        -60        HORIZONTAL LOAD DIRECTION (deg)

40        U          ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN4A
```

```
SOLUTION BEGUN AT 21 50 58
Enter two initial guesses for  H
1
2
SOLUTION COMPLETED AT 21 51 16
```

Date 2-Dec-82 SUMMARY Time 21:51:10

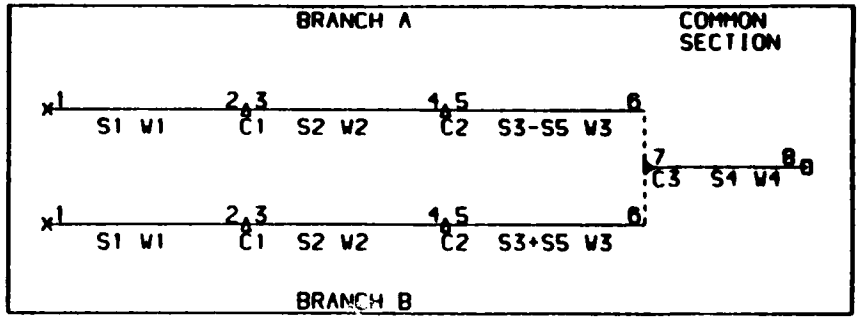
DOCUMENTATION 4A

INPUT

Original Input From File NONE

Revised to File DOC/RUN4A VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds



LEC

		---A---	---B---
Type	simple		
Anchor Separation		3	
Segments in Branch		3 00	
Angle to Bottom		22 50	
Length of Segment 1	S1	8 22	
Linear Weight of Segment 1	W1	1 70	
Weight of Sinker 1	C1	36 00	
Length of Segment 2	S2	1 61	
Linear Weight of Segment 2	W2	-1 83	
Weight of Sinker 2	C2	250 00	
Start Length of Segment 3	S3		0 10
Linear Weight of Segment 3	W3		
Friction Coefficient			
Weight of Equalizer/Spider	C3		
Length of Segment 4	S4		
Linear Weight of Segment 4	W4		

OCEAN BOTTOM

	---X---	-Depth-	---Z---
Floor Direction	90 00		
Floor Slope		0 00	
Point P1	0 00	27 00	0 00
Point P2	1 00	27 00	0 00
Point P3	0 00	27 00	1 00
Anchor A	0 00	0 00	0 00
Anchor B Origin	0 00	0 00	0 00

OCEAN SURFACE

Load Direction	-60 00
Horizontal Load H	9 15
Projected Excursion	306 74
True Excursion	306 74

OUTPUT

UNKNOWN INPUTS

9 15 - Horizontal Load Magnitude 306 74 - Buoy Excursion

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

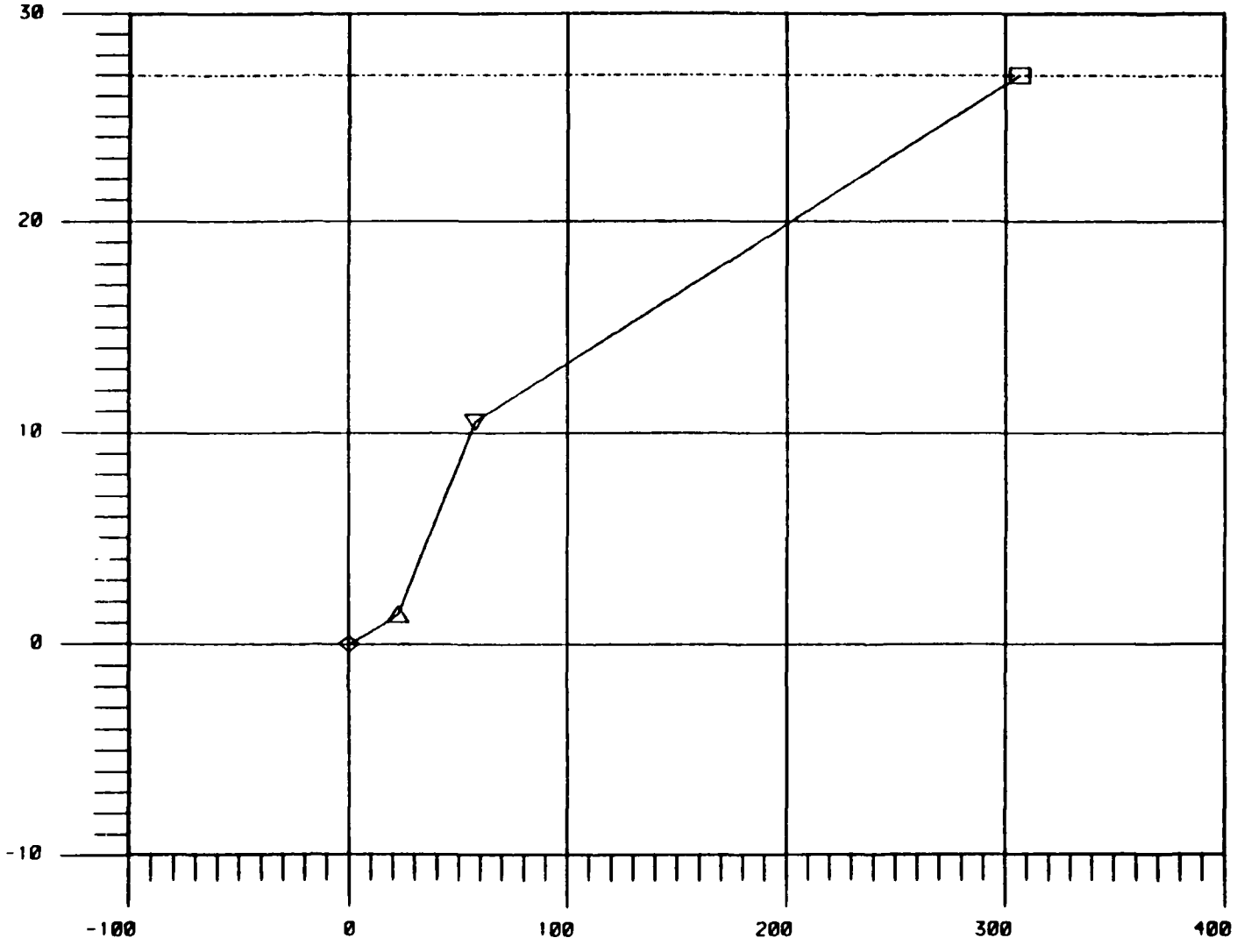
	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	-60 00													
VA	0 00													
C														
L	0 00													
H	9 15													
X	0 00		11 23		28 64								153 37	
Y	0 00		1 40		10 51								27 00	
Z	0 00		-19 45		-49 61								-265 64	
A	3 00	4 15	14 49	14 83	3 70	3 86								
V	0 48	0 66	2 36	2 42	0 59	0 62								
T	9 16	9 18	9 45	9 47	9 17	9 17								

```
Enter library name
DOC
Enter file name
RUN4A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
2



     ELEVATION VIEW
  output title    DOCUMENTATION 4A
  date      2-Dec-82        time     21 51 16
  # of segments          2
  xmin      -30 850       xmax      306 74
  ymin      0 00000       ymax      27 000

enter desired xmin
-31
enter desired xmax
307
enter desired ymin
-1
enter desired ymax
28
enter step size for x axis
100
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
10
enter number of minor tick intervals per step for y axis
10
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 ELEVATION VIEW Time 21 51 16

DOCUMENTATION 4A

Vertical Axis y in feet divided by 1 Horizontal Axis x in feet divided by 1



```
do you wish to plot this file again? (y or n)
NO
do you wish to plot another file? (y or n)
YES
Enter file name
RUN4A
Enter graph type
   1 - load displacement curve
   2 - elevation view
   3 - plan view
3
```

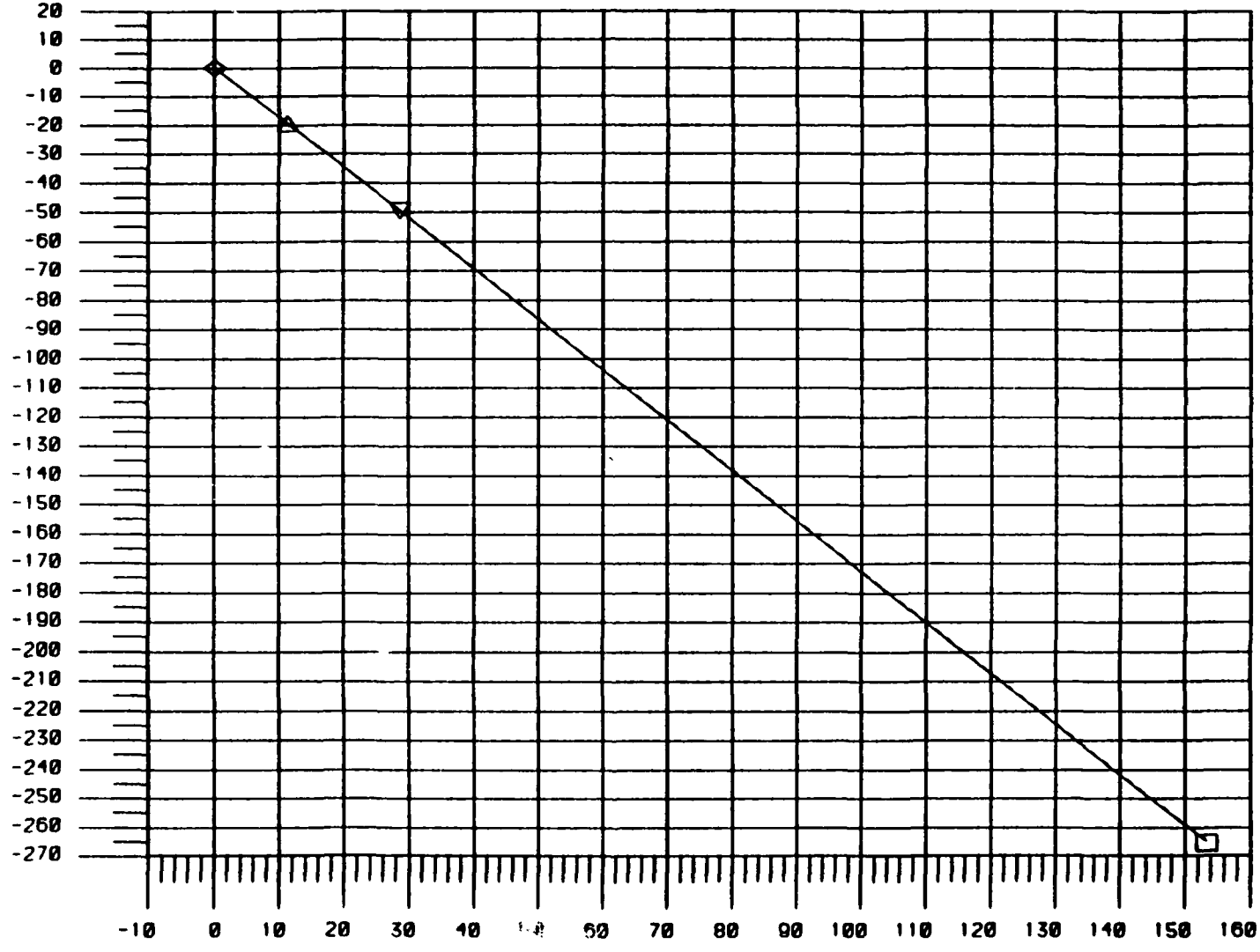
PLAN VIEW

```
  output title    DOCUMENTATION 4A
  date     2-Dec-82        time    21 51 16
  # of segments        2
  xmin     0 00000       xmax     153 37
  ymin     -265 64       ymax     15 000

Do you want to use your previous selection of graph options?
NO

enter desired xmin
-1
enter desired xmax
154
enter desired ymin
-266
enter desired ymax
16
enter step size for x axis
10
enter scaling factor for x axis
1
enter step size for y axis
10
enter scaling factor for y axis
1
enter number of minor tick intervals per step for x axis
5
enter number of minor tick intervals per step for y axis
2
do you want a grid? (y or n)
YES

Do you want to modify the graph options you have just selected?
NO
```

Date 2-Dec-82 PLAN VIEW Time 21:51:16

DOCUMENTATION 4A

Vertical Axis z in feet divided by 1 Horizontal Axis x in feet divided by 1



```
TITLE  DOCUMENTATION 4B
INPUT FILE  DOC/RUN4A VAR
 1        1          SOLUTION TYPE (-)
 2        1          LEG TYPE (-)
 3        ********* ANCHOR SEPARATION (ft)
 4        0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5        0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6        27         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7        1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8        0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9        27         OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10        0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11        1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12        27         OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13        3          NUMBER OF SEGMENTS IN BRANCH A (-)
14 A1A    U          ANGLE FROM OCEAN FLOOR TO CHAIN AT ANCHOR A (deg)
15 S1A    22 5       LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A    8 216      LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A    1 7        WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A    36         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A    1 609      LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A    -1 83      WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A    U          LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A    0 1        LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23        *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B    ********* LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B    ********* LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B    ********* WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B    ********* LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B    ********* LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B    ********* WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B    ********* LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B    ********* LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33        ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34        ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3     ********* WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4     ********* LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4     ********* LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H      9 15       HORIZONTAL LOAD (kips)
39        -60        HORIZONTAL LOAD DIRECTION (deg)

40        306 74     ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN4B
```

```
SOLUTION BEGUN AT 21 58 34
Enter initial guess for  A1
5
Enter initial guess for  S3
300
SOLUTION COMPLETED AT 21 58 54
```

Date 2-Dec-82 SUMMARY Time 21:58:54

DOCUMENTATION 4B

INPUT

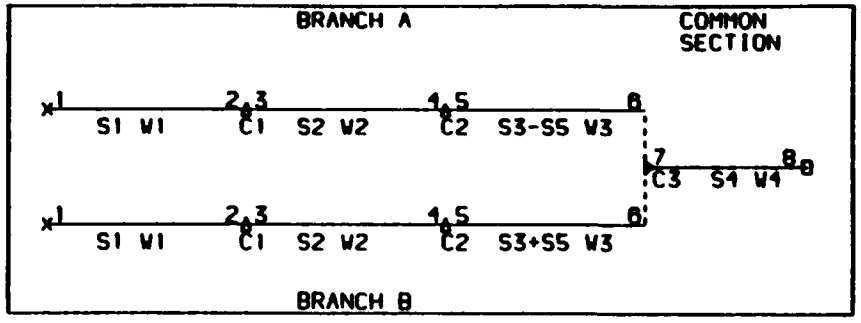
Original Input From File DOC/RUN4A VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEG

		---A---	---B---
Type simple			
Anchor Separation			
Segments in Branch		3	
Angle to Bottom		3 00	
Length of Segment 1	S1	22 50	
Linear Weight of Segment 1	W1	8 22	
Weight of Sinker 1	C1	1 70	
Length of Segment 2	S2	36 00	
Linear Weight of Segment 2	W2	1 61	
Weight of Sinker 2	C2	-1 83	
Start Length of Segment 3	S3	250 00	
Linear Weight of Segment 3	W3	0 10	
Friction Coefficient			
Weight of Equalizer/Spider	C3		
Length of Segment 4	S4		
Linear Weight of Segment 4	W4		

Revised to File DOC/RUN4B VAR



OCEAN BOTTOM

	---X---	-Depth-	---Z---
Floor Direction		90 00	
Floor Slope		0 00	
Point P1	0 00	27 00	0 00
Point P2	1 00	27 00	0 00
Point P3	0 00	27 00	1 00
Anchor A	0 00	0 00	0 00
Anchor B			
Origin	0 00	0 00	0 00

OCEAN SURFACE

Load Direction	-60 00
Horizontal Load H	9 15
Projected Excursion	306 74
True Excursion	306 74

OUTPUT

UNKNOWN INPUTS

3 00 - Angle to Bottom

250 00 - Length of Segment 3

HA - Floor Horizontal Angle
H - Horizontal Force
A - Catenary Horizontal Angle
VA - Floor Vertical Angle
X - X Coordinate
V - Vertical Force
C - Chain Coiled on Bottom
Y - Y Coordinate
T - Tension
L - Length Along Bottom
Z - Z Coordinate

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	-60 00													
VA	0 00													
C														
L	0 00													
H	9 15													
X	0 00		11 23		28 64								153 37	
Y	0 00		1 40		10 51								27 00	
Z	0 00		-19 45		-49 61								-265 64	
A	3 00	4 15	14 49	14 83	3 70	3 86								
V	0 48	0 66	2 36	2 42	0 59	0 62								
T	9 16	9 17	9 45	9 47	9 17	9 17								

```
TITLE  DOCUMENTATION 4C
INPUT FILE  DOC/RUN4A VAR
 1       1          SOLUTION TYPE (-)
 2       1          LEG TYPE (-)
 3       ********* ANCHOR SEPARATION (ft)
 4       0          OCEAN FLOOR POINT 1 X-COORDINATE (ft)
 5       0          OCEAN FLOOR POINT 1 Z-COORDINATE (ft)
 6       27         OCEAN FLOOR POINT 1 D-COORDINATE (ft)
 7       1          OCEAN FLOOR POINT 2 X-COORDINATE (ft)
 8       0          OCEAN FLOOR POINT 2 Z-COORDINATE (ft)
 9       27         OCEAN FLOOR POINT 2 D-COORDINATE (ft)
10       0          OCEAN FLOOR POINT 3 X-COORDINATE (ft)
11       1          OCEAN FLOOR POINT 3 Z-COORDINATE (ft)
12       27         OCEAN FLOOR POINT 3 D-COORDINATE (ft)
13       3          NUMBER OF SEGMENTS IN BRANCH A (-)
14 A1A   3          ANGLE FROM OCEAN FLOOR TO CHAIN AT ANCHOR A (deg)
15 S1A   U          LENGTH OF FIRST SEGMENT IN BRANCH A (ft)
16 W1A   8 216      LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH A (lbf/ft)
17 C1A   1 7        WEIGHT OF FIRST SINKER IN BRANCH A (kips)
18 S2A   36         LENGTH OF SECOND SEGMENT IN BRANCH A (ft)
19 W2A   1 609      LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH A (lbf/ft)
20 C2A   U          WEIGHT OF SECOND SINKER IN BRANCH A (kips)
21 S3A   250        LENGTH OF THIRD SEGMENT IN BRANCH A (ft)
22 W3A   0 1        LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH A (lbf/ft)
23       *          NUMBER OF SEGMENTS IN BRANCH B (-)
25 S1B   ********* LENGTH OF FIRST SEGMENT IN BRANCH B (ft)
26 W1B   ********* LINEAR WEIGHT OF FIRST SEGMENT IN BRANCH B (lbf/ft)
27 C1B   ********* WEIGHT OF FIRST SINKER IN BRANCH B (kips)
28 S2B   ********* LENGTH OF SECOND SEGMENT IN BRANCH B (ft)
29 W2B   ********* LINEAR WEIGHT OF SECOND SEGMENT IN BRANCH B (lbf/ft)
30 C2B   ********* WEIGHT OF SECOND SINKER IN BRANCH B (kips)
31 S3B   ********* LENGTH OF THIRD SEGMENT IN BRANCH B (ft)
32 W3B   ********* LINEAR WEIGHT OF THIRD SEGMENT IN BRANCH B (lbf/ft)
33       ********* INITIAL SLIPPAGE ACROSS EQUALIZER (ft)
34       ********* FRICTION COEFFICIENT (EQUALIZER) (-)
35 C3    ********* WEIGHT OF EQUALIZER OR SPIDER PLATE (kips)
36 S4    ********* LENGTH OF SEGMENT ABOVE JUNCTION (ft)
37 W4    ********* LINEAR WEIGHT OF SEGMENT (lbf/ft)

38 H     9 16       HORIZONTAL LOAD (kips)
39       -60        HORIZONTAL LOAD DIRECTION (deg)

40       306 74     ORIGIN-TO-BUOY DISTANCE (HORIZONTAL) (ft)
Do you want to change anything?
NO
Do you want to save parameters in a file?
YES
Enter name of output file
RUN4C
```

```
SOLUTION BEGUN AT 22: 1:50
Enter initial guess for S1
50
Enter initial guess for C2
3
SOLUTION COMPLETED AT 22: 2: 3
```

Date 2-Dec-82 SUMMARY Time 22 2 3

DOCUMENTATION 4C

INPUT

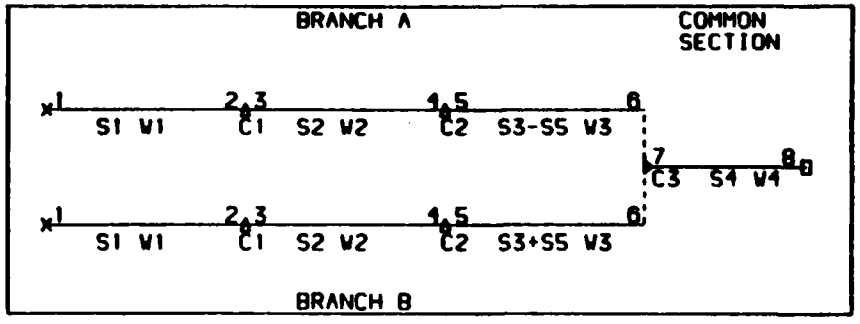
Original Input From File DOC/RUN4A VAR

Revised to File DOC/RUN4C VAR

Units
- Angles - Degrees
- Distances - Feet
- Linear Weights - Pounds/Foot
- Weights - Kilopounds
- Forces - Kilopounds

LEC

		---A---	---B---
Type simple			
Anchor Separation			
Segments in Branch		3	
Angle to Bottom		3 00	
Length of Segment 1	S1	22 50	
Linear Weight of Segment 1	W1	8 22	
Weight of Sinker 1	C1	1 70	
Length of Segment 2	S2	36 00	
Linear Weight of Segment 2	W2	1 61	
Weight of Sinker 2	C2	-1 83	
Start Length of Segment 3	S3	250 00	
Linear Weight of Segment 3	W3	0 10	
Friction Coefficient			
Weight of Equalizer/Spider	C3		
Length of Segment 4	S4		
Linear Weight of Segment 4	W4		



OCEAN BOTTOM

	---X---	-Depth-	---Z---
Floor Direction	90 00		
Floor Slope	0 00		
Point P1	0 00	27 00	0 00
Point P2	1 00	27 00	0 00
Point P3	0 00	27 00	1 00
Anchor A	0 00	0 00	0 00
Anchor B			
Origin	0 00	0 00	0 00

OCEAN SURFACE

Load Direction	-60 00
Horizontal Load H	9 16
Projected Excursion	306 74
True Excursion	306 74

OUTPUT

UNKNOWN INPUTS

22 50 - Length of Segment 1 -1 83 - Weight of Sinker 2

HA - Floor Horizontal Angle VA - Floor Vertical Angle C - Chain Coiled on Bottom L - Length Along Bottom
H - Horizontal Force X - X Coordinate Y - Y Coordinate Z - Z Coordinate
A - Catenary Horizontal Angle V - Vertical Force T - Tension

	--1A--	--2A--	--3A--	--4A--	--5A--	--6A--	--1B--	--2B--	--3B--	--4B--	--5B--	--6B--	---7---	---8---
HA	-60 00													
VA	0 00													
C														
L	0 00													
H	9 16													
X	0 00		11 23		28 64								153 37	
Y	0 00		1 40		10 51								27 00	
Z	0 00		-19 45		-49 61								-265 64	
A	3 00	4 15	14 48	14 82	3 71	3 86								
V	0 48	0 66	2 36	2 42	0 59	0 62								
T	9 17	9 18	9 46	9 48	9 18	9 18								

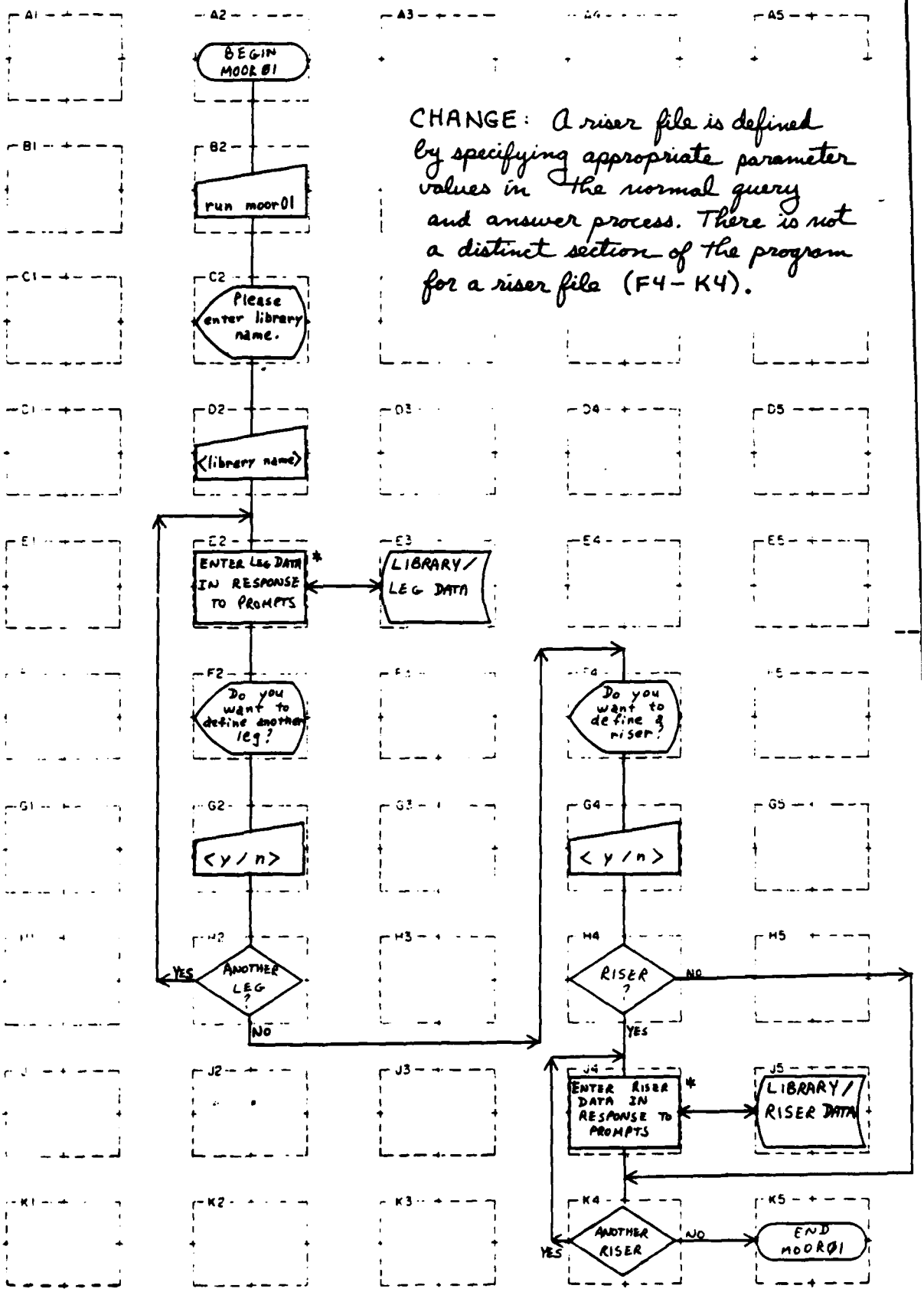
IBM Flowcharting Worksheet

Printed in U.S.A.
GX20-8021-2 U/M 050
Reprinted 5/75

Programmer: DAVID R. BENBENNICK, SR Program No.: MOOR01 Date: 22 MAR 82 Page: 1
Chart ID: Chart Name: LEG/RISER DATA INPUT Program Name:

Fold here

Fold under as dotted lines.



CHANGE: A riser file is defined by specifying appropriate parameter values in the normal query and answer process. There is not a distinct section of the program for a riser file (F4-K4).

* QUERY/ECHO SUBSYSTEMS

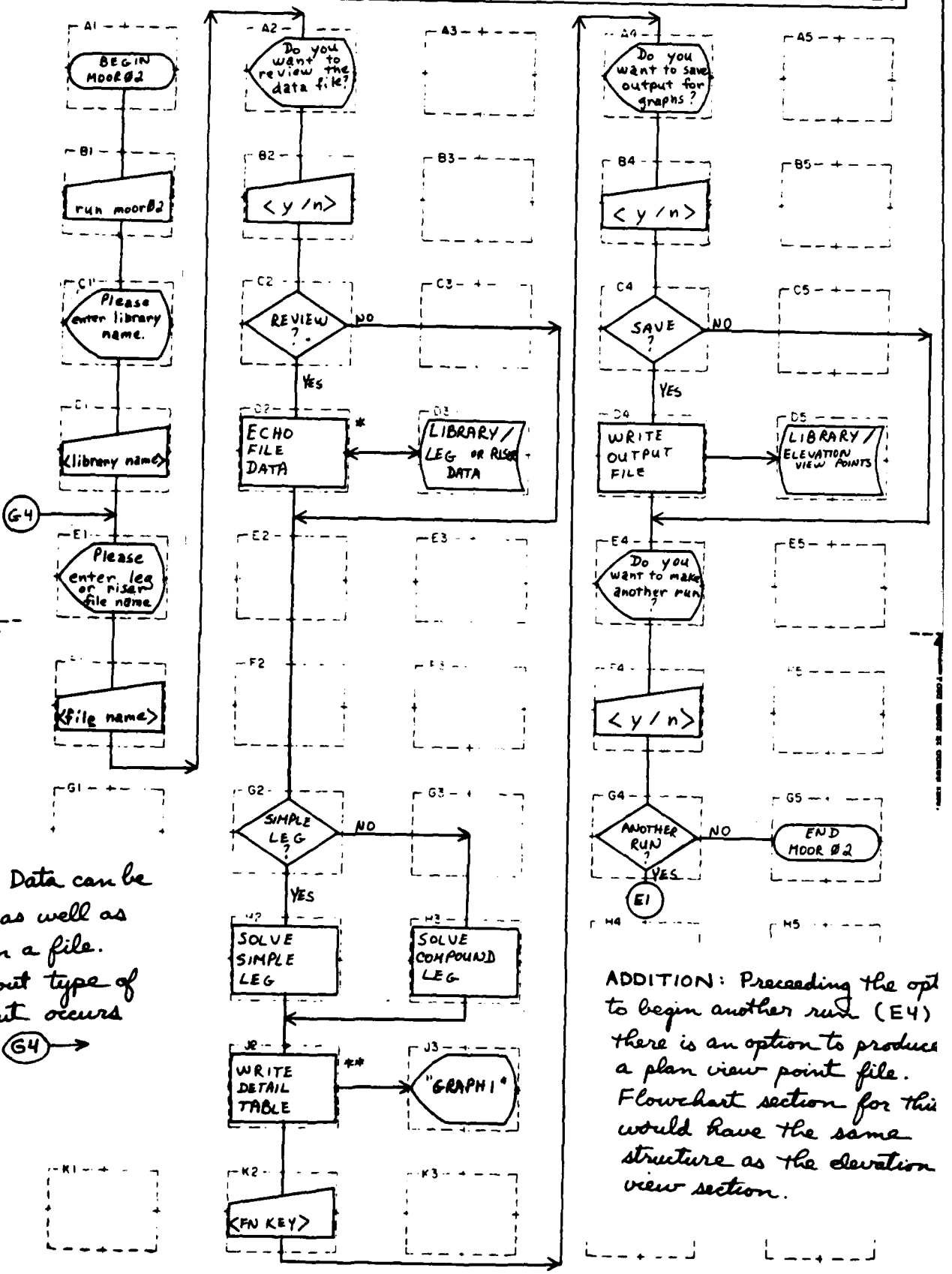
IBM Flowcharting Workaheet

Printed in U.S.A. GX20-8021-2 U/M 650 Reprinted 8/75

Programmer: DAVID R. BENBENNICK, SR Program No.: MOOR Ø2 Date: 22 MAR 82 Page: 2

Chart ID: ____ Chart Name: SINGLE LEG SOLUTION Program Name: ____

Fold to here



ADDITION: Data can be keyed in, as well as read from a file. Query about type of data input occurs between (G4) → and E1.

ADDITION: Preceeding the opt to begin another run (E4) there is an option to produce a plan view point file. Flowchart section for this would have the same structure as the elevation view section.

* ECHO SUBSYSTEM

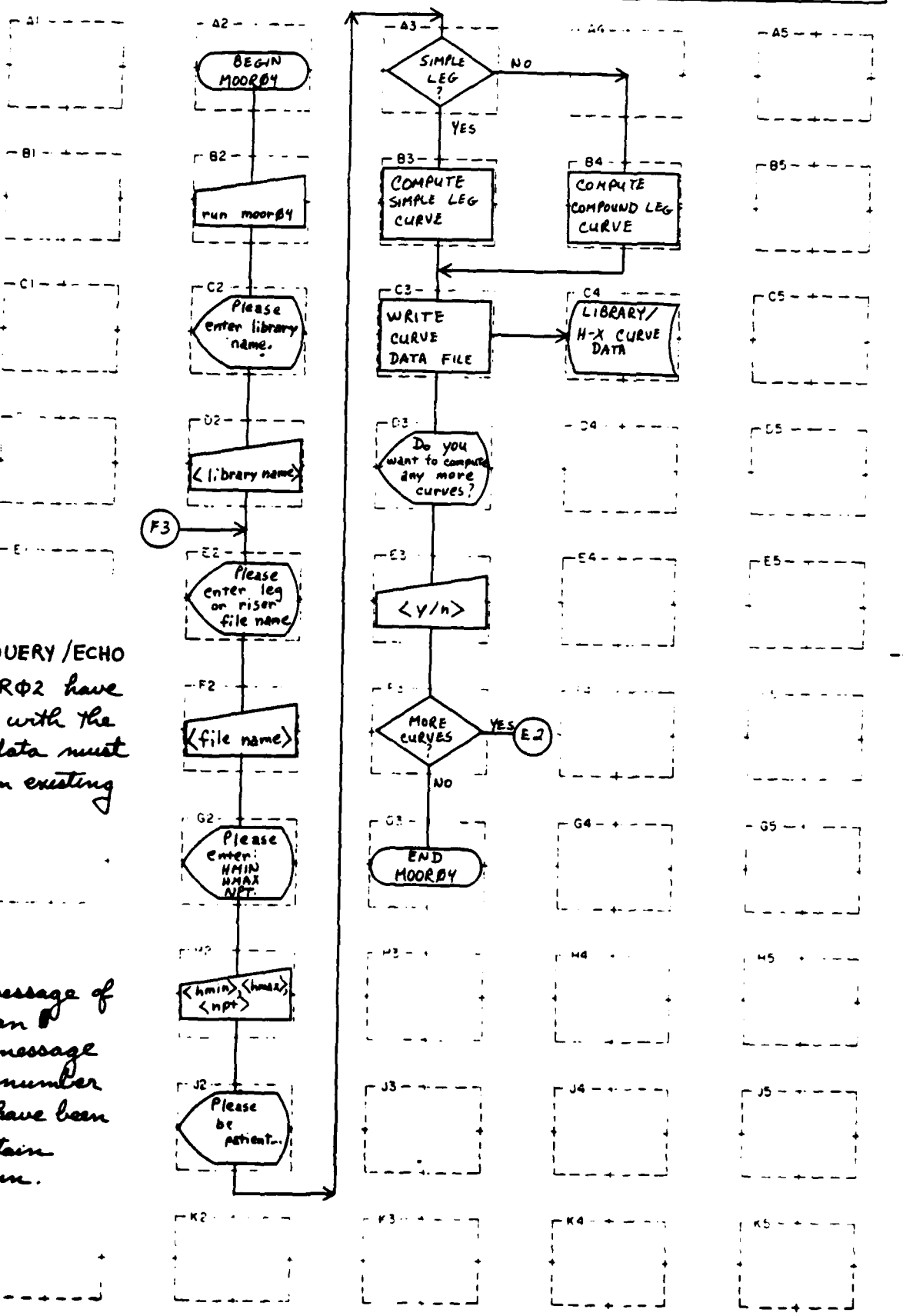
** LOCAL COORDINATE SYSTEM

IBM Flowcharting Worksheet

Printed in U.S.A. GX20-8021-2 U/M 030 Reprinted 5/75

Programmer: DAVID R. BENBENNICK, SR. Program No.: MOOR04 Date: 22 MAR 82 Page: 4

Chart ID: ____ Chart Name: LOAD-DEFLECTION CURVE SOLUTION Program Name: ____



ADDITION: All QUERY/ECHO capabilities of MOOR02 have been included, with the exception that data must be read from an existing file.

CHANGE: The message of block J2 has been replaced by a message indicating the number of points that have been produced at certain stages of the run.

IBM Flowcharting Worksheet

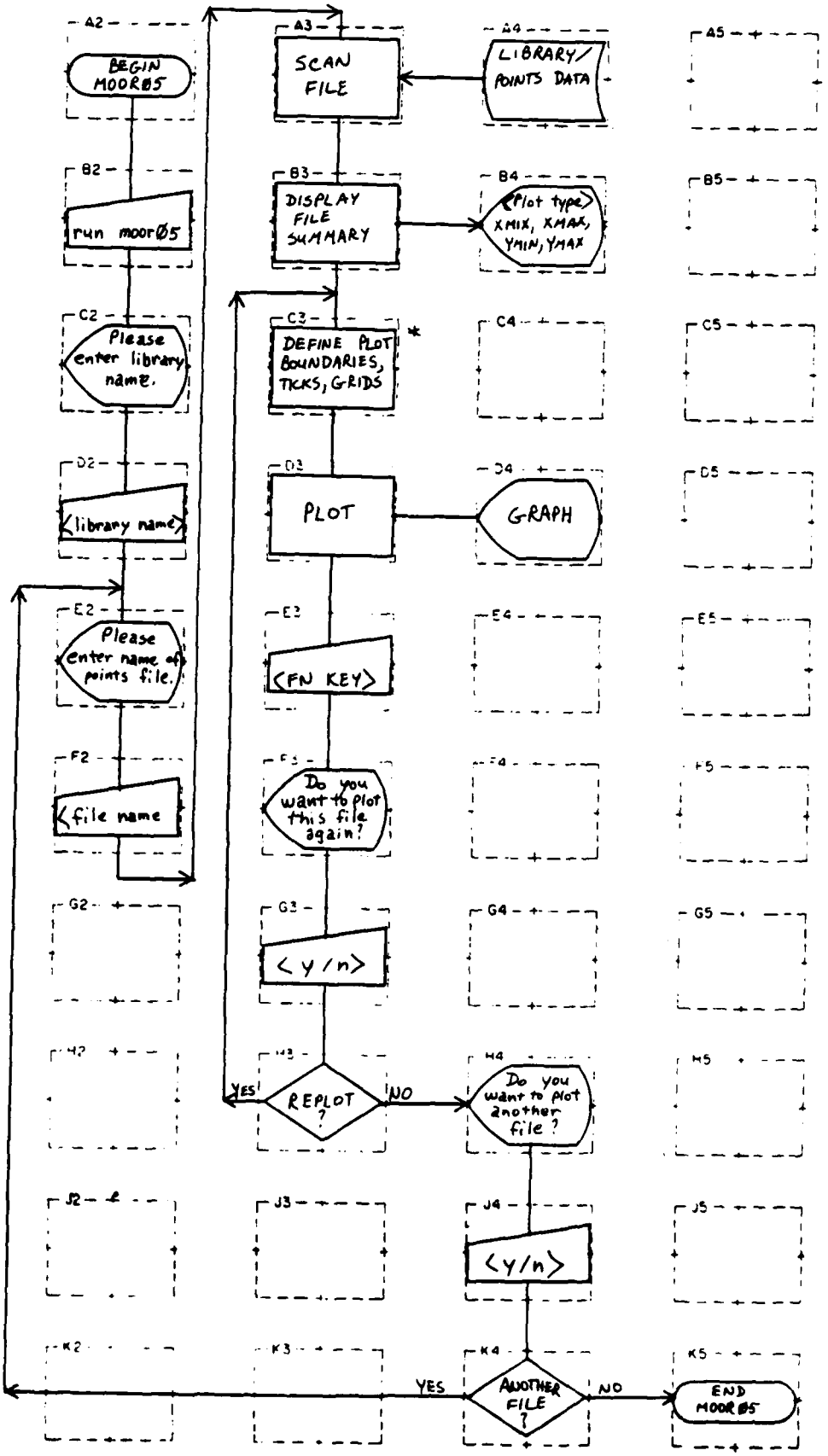
Printed in U.S.A. GX20-8021-2 U/M 050 Revised 8/75

Programmer: DAVID R. BENBENNICK, SR. Program No.: MOOR05 Date: 22 MAR 82 Page: 5

Chart ID: ____ Chart Name: GRAPHIC OUTPUT Program Name: ____

ADDITION: User is queried whether previous graph parameters are to be used. This question is asked after the file summary display (B3).

ADDITION: User is queried for type of graph after giving file name (F2). Thus the file name extension is not typed by the user.



*LIKE GRAPH2

END

FILMED

5-83

DTIC